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ABSTRACT

An increasing number of elementary school sites have begun to implement nongraded, multiage, primary developmental learning environments. Nongraded primaries are more than just a loosening of the age limits and a changing of the promotion strategies. This broad educational restructuring strategy provides a unique opportunity for creating new learning and inclusive environments as well as understanding systemic variables in schools affecting children with disabilities. The purpose of this paper is to describe the relationships among interdependent processes and resource-use strategies within the context of a specific school-reform/restructuring effort. This approach is designed to enhance system adaptability and inclusiveness as a means for achieving better educational outcomes for children with disabilities. What distinguishes this approach from previous research and development is not only the contextual focus on nongraded, multiaged primary blocks, but the systemic "holographic" and interdependent approach to school organization. This paper presents a systemic framework and theory for guiding the development, implementation, and evaluation of such reform grounded in organizational and systems theories of change. A systemic, holographic approach to school reform and restructuring is based on a conceptual framework that requires "putting the whole into the parts," rather than attempting to sum or link the parts to make a whole. (Contains 124 references.) (Author)

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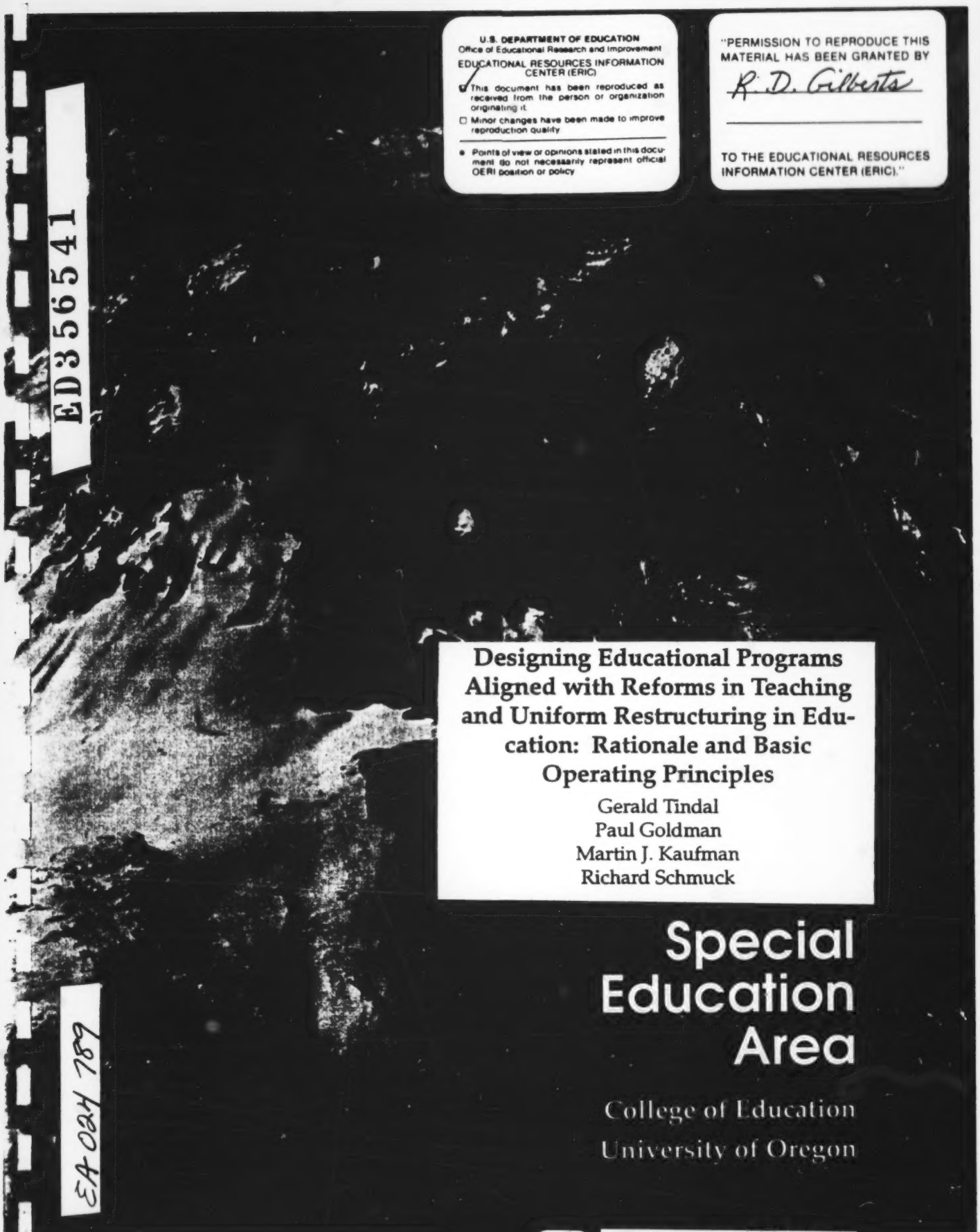

Designing Educational Programs Aligned with Reforms in Teaching and Uniform Restructuring in Education: Rationale and Basic Operating Principles

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Designing Educational Programs Aligned with Reforms in Teaching and Uniform Restructuring in Education: Rationale and Basic Operating Principles†

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Abstract

An increasing number of elementary school sites have begun to implement nongraded, multi-age, primary developmental learning environments. Nongraded primaries are more than just a loosening of the age limits and a changing of the promotion strategies. This broad educational restructuring strategy provides a unique opportunity for creating new learning and inclusive environments as well as understanding systemic variables in schools affecting children with disabilities.

The purpose of this paper is to describe the relationships among interdependent systemic processes (i.e., connectivity-redundancy, specialization-generalization, critical minimum specification, and self-organization) and resource use strategies (team building, consultation, information feedback) within the context of a specific school reform/restructuring effort (e.g., nongraded, multi-age, primary developmental block). This approach is designed to enhance system adaptability and inclusiveness as a means for achieving better educational outcomes (e.g., participation-contribution, independence-responsibility, social/behavior skills, and literacy) for children with disabilities.

What distinguishes this approach from previous research and development is not only the contextual focus on nongraded, multi-aged primary blocks, but the systemic "holographic" and interdependent approach to school organization. This paper presents a systemic framework and theory for guiding the development, implementation, and evaluation of such reform grounded in organizational and systems theory of change. A systemic, holographic approach to school reform and restructuring is based on a conceptual framework that requires "putting the whole into the parts," rather than attempting to sum or link the parts to make a whole.

School Restructuring and Special Education: The Systemic Challenge

The first official act of most school systems is to confirm whether students can begin school. Enrollment eligibility is based on chronological age determined by comparing the child's birthday to a pre-established cut-off date. Some students are deemed ready for school (those who have come of age in time); others (who are too young and not of age) must wait another year; for a very small minority, the margin of error around the cutoff date is vague, and parents are sufficiently persuasive, that they enter schools younger than their peers. In essence, from the very departure of children from the family into the school system, they are grouped into cohorts, generally on the basis of age, and not infrequently by their readiness to learn.

Yet, children present and challenge schools with extreme variability in their "pre-school" literacy related opportunities. Children from families which highly value reading have been provided approximately 40 minutes per day or over 1,000 hours on average of story book reading prior to entering school. In contrast, children from families where literacy related activities are minimal have been provided approximately one or two minutes per day or about 36 hours of storybook reading prior to entering school (Adams, 1990). Schools and teachers are challenged to attenuate, ameliorate, and "make even" for all students their ability to achieve performance standards. Kameenui (in press) discusses this problem as the "tyranny of time." Learning environments are needed in

†This monograph is an abridged version of Project DEPARTURE, submitted to the United States Office of Educational Research on Innovation: "Systemic Efforts to Restructure Schools" 84.023R

which at-risk children, including those with disabilities, must learn more in less time (Kameenui & Simmons, 1990). The nongraded, multi-age primary developmental block (NASBE, 1992) provides a restructured learning environment that allows a 27-to 36-month formative time frame, more realistic than the traditional 9-month summative grading period for reducing learning gaps.

The U.S. Department of Education's, Fourteenth Annual Report to Congress on the Implementation of the Individuals With Disabilities Act (1992) reports that approximately 25 percent of all children served under IDEA are six, seven, and eight years old. By far, most of these children receiving special education and related services are reported as having either learning disabilities or speech impairments. It is evident that the traditional lock-step grade promotion organization sets an inappropriate backdrop for children with disabilities during this critical developmental period. The necessity of regular education reforms designed to create a more adaptable and inclusionary learning environment cannot be over-emphasized.

The importance of the primary grades for all children, especially those at risk, including children with disabilities, deserves priority attention. Research suggests consistently that acquisition of early literacy and social/behavioral skills is fundamental to later school success (Stanovich, 1986), school dropout, pregnancy, and unemployment (Allington & McGill-Franzen, 1991; Slavin, 1989), and incarceration (Walker & Sylwester, 1991). As Boyer (1992) stated, "without dramatic intervention, children will come to school not only not ready to learn but also with their potential dramatically diminished" (p.44).

Recent instructional research on children with learning disabilities in the academic mainstream reports largely undifferentiated, whole-class, and text-driven learning environments (Baker & Zigmond, 1990). Mounting evidence documents the low amount of active reading instruction and academic learning time afforded low-achieving students (Allington & McGill-Franzen, 1989; O'Sullivan, Ysseldyke, Christenson, & Thurlow, 1990). Undifferentiated instruction or assignments, and lack of sufficient learning opportunities to "catch up," require educational reforms such as the nongraded, multi-age primary developmental block. These restructured learning environments have the potential to provide adaptable and inclusive organizational and instructional learning environments.

Oregon: A Bellwether State for Educational Reform

The state of Oregon provides a proactive opportunity to design authentic educational reforms that, from their inception, are sufficiently adaptable and inclusive to meet the needs of children with disabilities. House Bill 3565, The Oregon Educational Act for 21st Century Schools, enacted in 1991, has been recognized by the U.S. Department of Education and many national organizations (e.g., National Governors Association, the Business Roundtable) as a prototype for achieving comprehensive school restructuring. Like many states with budget deficits or shortages of state general funds, Oregon has had to delay implementation of some legislative mandates. Most school systems are currently in a cost containment, not an expansionist mode. In spite of the bleak fiscal portrait, Oregon is actively pursing educational reforms through inducements and system change project grants to school systems for restructuring initiatives. Therefore, this economic forecast should not be equated with a "stand-still or hunkering-down" orientation to educational reform. But the economic landscapes of states such as Oregon, with property tax measures limiting revenue and equalization of funding initiatives, requires reforms that can be managed within existing or even diminished resources.

The purpose of supporting such school/community based reform projects is to create natural variations in policy, organization, and service delivery contributing to the identification of design principles for school restructuring. The state of Oregon is one of the few states to promote legislatively non-graded, multi-age primary developmental blocks. This legislation and the State Task Force and network of 17 schools receiving State Department of Education project funding provide an extraordinary experimental educational reform program. Specific relevant sections of the legislation are displayed in Figure 1.

Nongraded, Multi-age Primary Developmental Blocks: A Promising Learning Environment

Gaustad (1992) defines nongraded primary education as "the practice of teaching children of different ages and ability levels together, without dividing them or the curriculum into steps labeled by 'grade' designations. The nongraded approach uses student diversity to advantage rather than regarding it as an impediment. Children grow socially and emotionally as well as intellectually as they work together in cooperative projects, help classmates who are younger and less able, and rely on older and more advanced peers when they need assistance themselves" (Gaustad, 1992, p. 1). This type of education allows students to move at a flexible pace, as skills and knowledge are acquired rather than age/grade attained (American Association of School Administrators, 1992).

In the nongraded model, no assumptions are made that age and developmental achievements are associated; as a consequence, children are not expected necessarily to progress at the same rate. In a nongraded primary, children do not pass or fail, but make continuous progress. "The use of letter grades is often replaced by alternative types of assessment, such as collections of student work and descriptive reports. Progress is evaluated with refer-

SECTION 12. (1) In addition to the application described in ORS 336.555 for the 21st Century Schools Program or ORS 336.720 for the School Improvement and Professional Development Program, a school district may submit proposals to:
(b) Establish nongraded school programs for students;
(f) Operate a team, small group model school with a team of teachers remaining with students over a period of several years using a variety of teaching techniques and research-based small groups;

SECTION 19A. (1) The Department of Education shall administer The Early Childhood Improvement Program to assist public schools districts in providing programs designed to improve educational services for children enrolled in grades kindergarten through three. Programs shall be based on research and proven successful practices in programs such as Head Start. The department shall evaluate the programs which receive grants Under this Act and report the results of the evaluation to the Legislative Assembly.
(2) The programs shall include the following planned components:
(a) Targeted services for "at-risk" children and families, which may include but are not limited to remedial and alternative academic programs, child care, parent participation and child development services.
(b) Efforts to improve the kindergarten through third grade curriculum and educational practices so that they:
(A) Are consistent with research findings on how children learn;
(B) Are sensitive to individual differences such as cultural background and learning styles; and
(C) Encourage parent participation.

SECTION 19f. (1) By the 1992 school year, the Department of Education shall recommend models for use by school districts for developmentally appropriate nongraded primary programs for children enrolled in pre-kindergarten through the primary grades. (2) Plans for early childhood education shall include a recommended funding formula and implementation process that recognize the need for flexible models to meet local needs and shall include strategies that:
(k) Encourage heterogeneous grouping of students and discourage negative labeling of children's learning levels; and
(l) Develop nongraded primary models that are culturally and linguistically appropriate.

Figure 1. H.B. 3565: Oregon Education Act for 21st Century Schools

ence to general normative standards and to the student's previous work, rather than by comparison with classmates" (Gaustad, 1992, p. 1). In traditional age/grade classrooms, the eventual choice between promoting students to the next grade or retaining them for an entire year frequently leaves teachers in a dilemma. What should be done with a student who works at or above grade level in some areas but below it in others? In nongraded primary programs, such problems are less likely to occur.

Nongraded, multi-age primary programs provide a context of: (a) critical period for child development and acquisition of academic foundations; (b) an optimum learning environment for organizational, curricular, and instructional experimentation related to adaptability and inclusion; and (c) a rapidly emerging national educational reform of importance to children with disabilities. Oregon provides a natural laboratory for developing, implementing, and evaluating a systemic approach to interdependent processes and resource use strategies for assuring the adaptability and inclusiveness of this primary school reform movement. The uniqueness of this opportunity, it's importance, and its need for students at-risk or with disabilities are further evidenced by an ERIC search. In the ERIC system as of September, 1992 only six entries combined inclusion or mainstreaming with ungraded, nongraded, or multi-age classrooms. These references revealed only incidental association; none referred to either an instructional program or a research study.

The Challenge of Developing A Systemic Approach to Achieving Adaptable and Inclusive Primary Education Reform

School restructuring poses extraordinarily complex problems for those who wish to initiate and sustain dramatic changes. Practitioners and publics have come to expect a mass-production model, personalized to be sure,

oriented around grade levels, a modicum of ability-grouping, a sequenced curriculum that is relatively standardized at least at the building or district levels, and a comprehensible, discrete system of student evaluation. Restructuring shatters these expectations, requiring *systemic* change that alters the nature of longstanding processes and relationships that have characterized American schooling.

It is imperative to determine how students with disabilities and the delivery of special education fit into the school restructuring equation. Conley (1991) defines restructuring as "activities that change fundamental assumptions, practices and relationships, both within the organization, and between the organization and the outside world in ways that lead to varied and improved student learning outcomes for essentially all students." He suggests that it contains a series of overlapping dimensions: Restructuring is "complex, multidimensional, and at times contradictory. It involves discussion, planning, programs and structures." Specifically, restructuring may include (a) changing the core technology of schools, which incorporates what is taught, how, and to whom; (b) changing the occupational conditions of teaching, increasing, if possible, both professionalism and accountability; (c) changing the school's authority and decision-making structures and processes; and (d) changing the relationship between the school's staff on the one hand, and its clients and communities on the other (David, 1989, Elmore & Associates, 1990).

Malcolm Katz (1991) challenges practitioners and scholars to realize and to research holistic change. He notes that the emerging "new improvement model" of school change emphasizes (a) multiple elements rather than single variables, (b) school culture rather than the classroom or student, (c) long-term rather than short-term results, (d) humanistic rather than technological orientation, (e) multiple correlates/interactive effects rather than causes and effects, and (f) school and community variables rather than in-school variables. The new model implicitly recognizes that schools need not be, and perhaps should not be, "loosely coupled" aggregations of teachers and students teaching and learning in classrooms. The restructured school builds interdependency through interaction, collaboration, and flexible responses to student learning problems.

Correspondingly, change and adaptation are not discrete phenomena, and individual or collective decisions reverberate throughout the learning community, affecting the everyday school life of pupils and their teachers and confounding the expectations of parents as well. Multi-age classrooms for kindergarten to third graders, for example, do not represent a simple, additive change or innovation. Multi-age primary education is not a nostalgic recapitulation of the one room schoolhouse reflecting a homogeneous and typically uncritical community. Rather, such educational reform is a strategic, systemic response of interdependent, not additive processes and resource-use strategies to more effectively manage the diversity and complexity of individual needs of children, including those with disabilities. .

Nongraded, multi-age primary school reform does not consist simply of a re-division of the time that changes need to occur as students are "mainstreamed" or included. This reform requires more than simply re-dividing the time that students with disabilities spend in classrooms; rather, the very structure of schools must change: "To be sure, schools in an inclusive, restructured system, must look very different from the typical school that exists today. In the expanded vision, the place called school is actually a center for community activity. Students do not move through the traditional lock-step, age-grade progression, but rather are grouped heterogeneously, based on the particular lesson. Not all students necessarily work on the same tasks at the same time, but rather curricular goals are achieved thorough a variety of methods" (NASBE, 1992, p.12 and 14). Inclusionary practices "may be chosen for organizational convenience and scheduling purposes rather than the educational needs of the student" (NASBE, 1992, pp. 10-11).

As teachers attempt to manage this instructional and learning environment they must learn to recognize and, more importantly, have the capacity to respond to individual children's learning problems and disabilities. In such environments, the need for continuous information on student progress is essential. Hornbeck (AASA, 1992) emphasizes the critical need for assessment tools and strategies which can guide instruction based on stipulated goals and outcomes. A concern with such fluid learning environments (e.g., open classrooms) is how to monitor and obtain feedback on student progress and instructional effectiveness. Instructional personnel must develop teaming strategies enabling them to individualize curriculum and accommodate not just a few new students every September, but students entering (or exiting) throughout the year from traditional graded classrooms. They must transition students to the more structured fourth-grade environment. In short, teachers and specialists functioning in a nongraded, multi-aged primary developmental block confront a range of complex, simultaneously occurring challenges.

How Do We Decide Whether Change is "Systemic?"

This paper addresses a single issue that combines policy, practice, and research concerns. Specifically, how do schools initiate, implement, and maintain a systemic approach within nongraded primary/nongraded developmental blocks that is adaptable and inclusive as a basis for enhancing participation, independence and responsibility, social and behavioral skills, and literacy for *all* children? The following table describes four questions,

Table 1. Systemic versus Additive Consequences

Question	Proposition	Counter Proposition
How does a systemic approach differ from an additive approach	A systemic approach requires interdependencies to create a nongraded primary block that is capable of being an adaptable and inclusive learning environment in meeting the needs of all children, including those with disabilities	Specialized programs can additively achieve a unity across the primary grades that results in an adaptable and inclusive learning environment that meets the needs of all children, including those with disabilities.
How do general education teachers adapt the learning environment to effectively include diverse learners?	The greater the connectivity between the primary teacher and specialty teachers, the greater their capacity will be to adapt for, and to include, children with disabilities	The general education teacher will exchange information with specialists but neither develop new skills nor persist in adaptations necessary to effect continuous student progress.
How does the function and knowledge of specialists change in a nongraded primary developmental learning environment?	Generalists assimilate more specialized functions and specialists accommodate more generalized needs and demands. Together, they develop programs that reflect greater adaptation and are more inclusive of all students, particularly those with disabilities	The primary role of the specialist is to work directly with individual students in a separate setting to overcome skill deficits; instruction in this setting supplants the instruction in the general education setting.
How do children progress in a learning environment that has been systemically organized to be adaptable and inclusive?	The more teaming between specialists and general education teachers, the more effective the adaptations are in maintaining student progress and the more students are taught together, those with and without disabilities	The counter proposition is that increased teaming will result only in more, not more effective, adult interactions that do not result in improved student progress.

and four competing propositions that emerge from this broad issue.

A Systemic and Innovative Approach to School Restructuring

Conceptual Framework and Theoretical Orientation

The U.S. Department of Education request for proposals entitled "Systemic Efforts to Restructure Schools" defines innovativeness as developing and implementing systemic changes at the school level, required to incorporate effective practices for children with disabilities into broader school based educational reform and restructuring initiatives. The federal regulations governing this program define innovativeness as "a conceptual framework that is founded on previous theory and research; and provides a basis for unique strategies and approaches to be incorporated into the model" (20 U.S.C. 1441-1442).

The conceptual framework and theory guiding the development, implementation, and evaluation of the proposed systemic changes is grounded in organizational and systems theory (Morgan, 1986; Schmuck & Runkel, 1985) theories of system change (Kanter, 1983), and implementation of innovations (Fullan, 1985; and Loucks-Horsley & Cox, 1984). The innovativeness of this paper lies in its ability to integrate these theories into a systemic conceptual approach and framework.

The present discussion conceptually and theoretically brings together (a) systemic processes, (b) empirically supported resource-use strategies, (c) systemic outputs, and (d) student outcomes as a means for responding to the priority requirement for affecting the inclusion of individuals with disabilities into broader educational reform and restructuring initiatives (See Figure 2).

What distinguishes this paper from previous research and development is not only the contextual focus on nongraded, multi-aged primary blocks, but the systemic *"holographic"* and *interdependent* approach to organizations (Morgan, 1986). It represents part of an effort to operationally design, develop, implement and evaluate *systemic processes* and *resource use strategies* consistent with a systemic, holographic approach to including children with disabilities into broad school reform and restructuring initiatives.

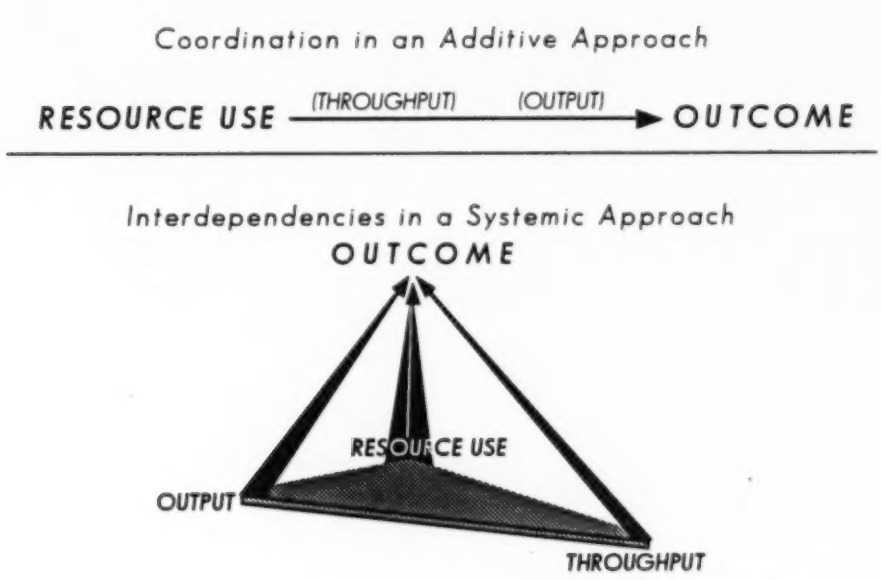

Figure 2. Foundations of systemic interdependencies

One can characterize much of the national effort to undertake educational reforms as piecemeal. Schools too often use either an additive or linking approach to achieving educational reform and restructuring. In the additive approach, reforms — often empirically supported strategies (e.g. adoption of cooperative learning, peer tutoring) are just added on to current instructional practices. The implicit principle is "more is better." In the linking orientation, school restructuring initiatives may add on boundary-spanning innovations such as collaboration with other human service providers. Such additive and linking approaches have created schools that, while adopting effective organizational and instructional strategies, end up resembling a Rube Goldberg machine in their structure and complexity.

This additive approach to educational reform and restructuring reflects an incremental orientation to change. A systemic approach implicitly calls for transforming schools, not transferring innovations. A systemic, holographic approach to school reform and restructuring is premised on a theoretical and conceptual framework that requires "putting the whole into the parts" (Morgan, 1986), not attempting to sum or link the parts to make a whole. A systemic, holographic approach to school reform does not consider such empirically supported innovations as team building (Schmuck & Runkel, 1985), consultation (Sugai & Tindal, 1993), and curriculum based assessment and measurement (Tindal & Marston, 1990) as additive but rather as interdependent. From a systemic effort, these innovations are considered as resource-use strategies that are interdependent and must be operationalized in a manner supportive of, and consistent with, four essential systemic processes. Before discussing these four systemic processes, however, we must ground our discussion in the concrete and operational resource strategies that schools use on a day-to-day basis.

A Model for Driving Restructuring and Systemic Change

The innovative model we propose for "developing and implementing systemic changes at the school level required to incorporate effective practices for children with disabilities into broader school-based educational reform and restructuring initiatives" (CFDA 84.023R) has five major components. In this section, we describe these components and relate them to our overall theme.

1. A contextual component, which we have already described *(nongraded primary, multi-age primary developmental learning environment).*

2. A throughput component, which defines the systemic approach and concomitant process interdependencies. It is the *interdependency* of these four systemic processes as operationalized by effective resource use strategies that is the foundation of any true restructuring effort, and, often, it is missing. These four systemic throughput processes are: (a) connectivity-redundancy, (b) specialization-generalization, (c) minimum critical specifications, and (d) ability to self-organize.

3. A resource-use strategy component which operationalizes the systemic, holographic approach and processes for affecting educational reform and restructuring. We focus on three particular strategies: (a) team

building, (b) consultation among the team and educational specialists, and (c) student assessment information and learning feedback.

4. An output component which is the proximal result of these three components and defines, from an organizational and staffing perspective, what systemically is to be accomplished: (a) adaptability for and (b) inclusion of children with disabilities in nongraded, multi-age primary developmental learning environments.

5. The outcome component is a distal result of the systemic changes and focuses on four specific educational outcomes which we believe must be attained for society to be supportive of school restructuring: (a) participation-contribution, (b) independence-responsibility, (c) social/behavioral skills, and (d) literacy.

Components of the Systemic Approach: the Holographic School

We believe that systemic change in education requires schools to restructure themselves from traditionally organized bureaucracies into more flexible holographic learning organizations where educators as well as children are continually broadening and deepening their knowledge and skills. Recent research on restructured schools suggests that this is beginning to occur, but its effects are not yet widespread (Conley, 1992; Goldman, et al. 1993; Miles and Louis, 1990; Reitzug & Reeves, 1992).

The traditional school relies on compartmentalization, specialization (e.g., special education teachers, Chapter 1 teachers, bilingual teachers), and paper communication (Shedd and Bacharach, 1991). The typical school's highly compartmentalized instructional delivery structure is neither appropriate for nongraded classrooms nor for achieving inclusive learning environments. A restructured school (e.g. learning organization), in contrast, relies on interdependency, effective communications, and adaptability to provide effective educational services to all students. The combination of nongraded, multi-age primary developmental learning environments that include children with disabilities provides a unique laboratory for designing reforms.

What are the characteristics of a systemic, holographic school? Gareth Morgan (1986) drew on cybernetics, learning theory, brain physiology, organizational decision science, and communications theory to argue that the brain is an appropriate metaphor for analyzing, researching, and transforming organizational behavior. Morgan (1986) suggests that "organizations are information processing systems capable of learning to learn (p. 80)." From a holographic perspective each faculty member continuously expands their capacity to incorporate aspects of the knowledge base of educational specialists. This increased capacity of faculty contributes to the ability of the school as a "system" to be more adaptive and inclusive.

Understanding the parts—that means understanding the teacher, the classroom, the learning group—means understanding the larger whole, much as a paleontologist reconstructs a dinosaur from a femur or a molecular geneticist constructs human characteristics from a DNA molecule. They do so by drawing the connections among disparate parts. Similarly, teachers and students should not study specific subjects or processes in isolation from one another. Thematic curricular emphases such as "writing across the curriculum" or "multi-cultural month" and cooperative learning as a building-wide policy are examples of schools' efforts to integrate parts with the whole, as is the evolution from junior high school to middle school during the past two decades. More significantly, efforts to develop and convey a "school vision" testify to the importance educators have attached to creating the perception of the school as a holistic phenomenon (Conley, et al, 1992).

The systemic, holographic school has four characteristics: (a) simultaneous specialization and generalization; (b) connectivity and redundancy; (c) minimum critical specification; and the (d) ability to self-organize and learn as an organization.

Simultaneous Specialization and Generalization

Educational specialization is a necessity for schools educating students with complex, diverse, and changing needs, including those with disabilities. As student diversity grows, non-English speakers, students with disabilities, students whose families experience crises, the student body increasingly requires a wider range of specialists to identify and serve their needs. Morgan (1986) refers to this diversity as the principle of requisite variety. This wide and seemingly expanding range of complex child and family needs requires schools to have diverse expertise, diverse perspectives, and capacity to respond appropriately.

While specialists provide the "requisite variety" needed by schools to apply cutting-edge advancements in professional knowledge and practice, there are potential inherent organizational pitfalls to avoid. Recent publications by NASBE (1992) and ARC (1992) highlight such organizational pitfalls as compartmentalization of programs and services, segregation of children in order to deliver specialized services, and instructional discontinuity.

The systemic, holographic approach and processes we propose will enable teachers and schools to effect new and yet unidentified structures and means for wholistically not additively unifying staff specializations and general education teachers efforts. Team building that unifies faculty, consultation that assists in transfer of knowledge and practices, and student assessment feedback to all team members will contribute to more flexible, adaptable, and inclusive learning environments.

The purpose of simultaneous emphasis on specialization and generalization is not to disparage expertise, but to bring new perspective to the traditional discussions about designing interdisciplinary, multi-disciplinary, or

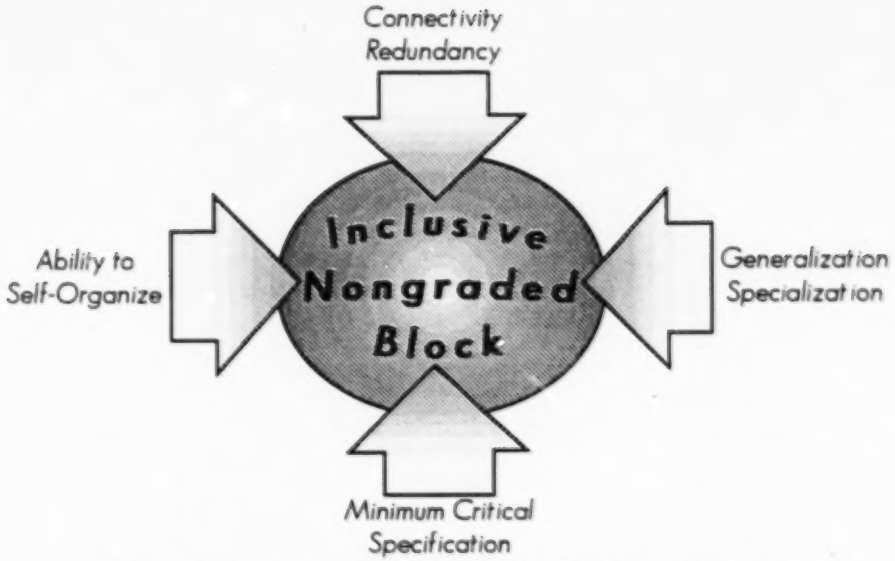

Figure 3. Four processes guiding the throughput from a systemic approach

trans-disciplinary educational programs. In these models, the primary emphasis was on specialization. It is our opinion that the emphasis needs to be placed on how to utilize specialists to expand, not just complement, the school's general capacity to better meet all students' needs. We hypothesize that the systemic process of specialization-generalization will result in greater school capacity to identify learning problems, and when appropriate to design multiple sequential adaptations when a student is not progressing.

Connectivity and Redundancy

Systemic, holographic schools need to create connectivity and redundancy. Such schools would be seamless in the sense that teachers would be attuned enough to one another's skills, curricula, and student learning to maintain continuity despite the inevitable disruptions of day-to-day classroom life. Connectivity provides an online back-up system in which knowledge about one another's approach, style, and expertise helps teachers to step into one another's role in a fashion that does not disrupt student learning. They do this by collaborative planning, team teaching, ongoing consultation and problem-solving, and formative assessment of student learning to identify issues and problems before they require massive intervention.

Connectivity and redundancy processes are implemented and reinforced when schools have strong internal cultures that stress mutual commitment of staff to students and to one another. Sergiovanni (1991) suggested that this sense of mission is a moral covenant reflecting a shared commitment essential to educating all children. Bossert (1988) and Deal (1985) argued that strong cultures, which bind staff together through a collective sense of intimacy, subtlety and trust, are associated with school effectiveness.

The development of such school cultures requires that connectivity be operationalized through collaboration and communication, as well as through commitment to children. These cultures do not just happen; the press of day-to-day responsibilities and problems creates constant pressure towards a traditional culture of teacher isolation as the most efficient short-term coping strategy. Substantive interaction is time consuming and often seems inefficient; and meetings can both re-ignite old staff conflicts and create new ones.

The team-building, consultation, and assessment strategies we propose are designed to help create systemic connectivity and redundancy by facilitating communication and a collaborative culture for problem-solving.

Minimum Critical Specification

The systemic process of minimum critical specification requires an organizational orientation towards problem solving rather than towards preset bureaucratic requirements. Morgan (1986) argued that systemic, holographic learning organizations must "reverse the bureaucratic principle that organizational arrangements need to be defined as clearly and precisely as possible (p. 101)." Traditionally, organizational theory considered schools as closed not open-ended systems. In a closed system where predictability and control exists, rules, regulations, the division of labor, and hierarchical relationships discourage innovation and adaptability.

However, schools are open-ended systems, driven by children with diverse, unpredictable, and changing academic and developmental needs. If regular education teachers and educational specialists are to take advantage

of the simultaneous specialization and generalization described above, they must have maximum opportunity to develop creative solutions to the learning problems their students face.

In the systemic, holographic school we find tolerance for diversity of solutions so that even similar problems may engender different modes of address, depending on contextual factors: classroom composition and chemistry, teacher skills, available materials. In the context of systemic change, Glickman (1989) puts the case more strongly, suggesting that teachers are the solution to, not the cause of problems. Reform that empowers educators allows them to find their own answers to problems.

Ability to Self-Organize

In restructured systemic, holographic schools, educators will have "learned to learn." School administrators can play a special leadership role in helping to shape and manage the systemic transformation of schools into learning organizations (Senge, 1991). They do this by arranging such resources as release and meeting time, assembling synergistic working groups, nurturing leadership, coordinating and providing feedback, networking internally and externally, persuading, and modeling behavior (Goldman, et al., 1993; Reitzug & Reeves, 1992).

Much has been written about how the job of today's (and tomorrow's) principal has moved from management functions and environmental buffering providing leadership, sustaining a vision, and building the school's human relations climate (Blumberg, 1989; Griffiths, et al., 1988). Facilitation in general, and especially facilitating communication among the professional staff, is especially crucial in implementing such new and innovative programs as nongraded classrooms and inclusion of children with disabilities (Dunlap & Goldman, 1991). Training programs are either adding this emphasis, or as at the University of Oregon, actually building their administrator preparation programs around leadership and communications skills (Schmuck, 1992; Tucker-Ladd, et al., 1992).

The new emphasis on school-based management and decision-making and on instructional leadership suggests that teachers increasingly will develop and utilize these skills as well (Goldman, et al., 1993; Weiss, et al., 1992). They will do this through participation in decision-making and in leading staff activities, including school-wide policy making. Provenzo et al. (1989) and Glickman (1989) suggest that the empowerment that comes from actively participating in the decisions associated with the change process, and new skill development. Increased genuine collegiality provides a bridge between the individual autonomy focus traditionally associated with educational professionalism and the requirements of educational reform.

The innovative context of nongraded, multi-age primary developmental learning environments provides a unique opportunity for systemically and holographically utilizing the proposed resource-use strategies to develop the capacity of schools to be learning organizations.

Output

The output from our perspective is a learning environment (both physical and social) that is more adaptable and inclusive. A nongraded primary, by the very nature of opening up the grouping and processing of students provides an excellent forum for establishing this premise.

Adaptation

In this learning environment, adaptations are made. Ysseldyke at al. (1992) define adaptation as "modifications that must be made to adjust or make up for some type of disability...[a] domain [that] reflects the nature of, or extent to which, changes are made to help the individual deal with everyday stimuli even though disability exists" (p. 10). Schools need to consider the kinds of adaptations that Wolery, Baily, and Sugai (1988) describe: providing appropriate physical facilities that are conducive to teaching and learning, systematic and thoughtful environmental planning that promotes engagement, functional and relevant materials, appropriately structured time and activities that include everyone, and multiple opportunities for learning and practice.

Inclusion

For the Association for Retarded Citizens, (ARC, 1992), "inclusion refers to the opportunity for all students to participate in the totality of the school experience. It includes integration into regular classrooms in neighborhood schools for both educational and social opportunities. More than this, however, it means that students with mental retardation participate in or attend extracurricular activities such as sports and school plays, eat and socialize with peers in the school lunchroom, and engage in other school activities from which they are often excluded " (Davis, 1992, p. 2). The National School Boards of Education (NASBE) adds the following characteristics and features to the concept of inclusion:

- the proportion of students labeled for special services is generally uniform for all of the schools within a particular school district.
- special classes or wings within the school are not used to isolate students.
- students receive their in-school educational services in the general education classroom with appropriate in-class support.
- students are given the opportunity to learn a variety of life and employment skills in normal community settings (NASBE, 1992).

With inclusion, students with disabilities can meet an increased number of their individualized education program (IEP) goals in integrated settings; they are more motivated to learn in integrated settings; they have access to peer models to facilitate learning and acquiring appropriate social behaviors; they encounter the expectations

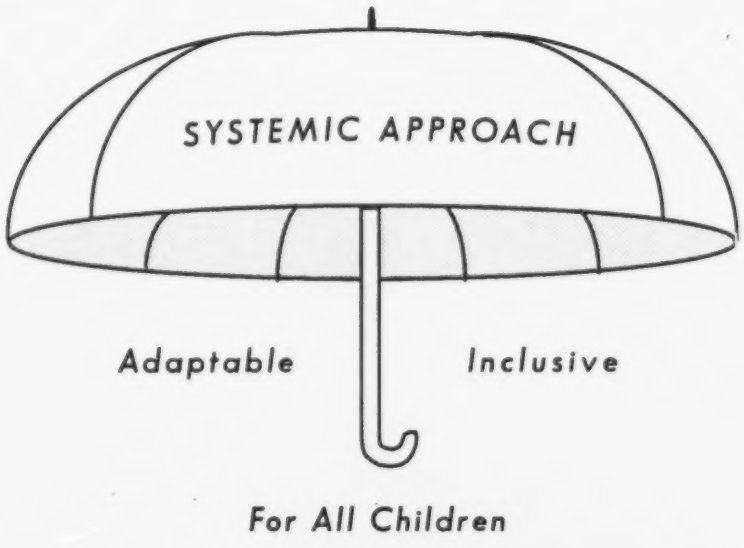

Figure 4. Two aspects of output from a systemic approach

and diversity of society; they develop friendships between classmates with and without disabilities; and finally, they learn to appreciate and accept individual differences and to appreciate the abilities and strengths of their classmates with disabilities (Davis, 1992).

Inclusion, however, cannot emphasize access at the expense of outcomes: "The original intent of The Education for All Handicapped Children Act [now entitled Individuals with Disabilities Education Act] was to ensure that all children with disabilities receive a free, appropriate public education. The actual outcome or product of the education was not a primary focus. Lawmakers and advocates assumed that guaranteed access and individualization would ensure good educational outcomes for students with disabilities. Unfortunately, as educators examine the outcomes of special education, they realize that for many youth with disabilities, a fairly bleak future lies ahead" (NASBE, p.8).

Student Outcomes

Finally, the impact or outcome from this systemic approach is student benefit, The National Educational Outcomes Center at the University of Minnesota (Ysseldyke, Thurlow, Bruininks, Gilman, Deno, McGrew, & Shriner, 1992) identifies four categories of student benefit: (a) presence/participation, (b) independence/responsibility, (c) social/behavioral skills, and (d) literacy. We have arranged these into four major clusters that better fit our current focus on nongraded primary programs and, in particular, in adaptation and inclusion (Figure 5). We believe that students benefit from educational programs when they become active participants, exhibit responsibility and independence, reflect well-developed social and behavioral skills, and learn to read, write, and reason.

Presence-Participation

We define *presence-participation* as "the extent to which an individual is present in a particular setting and the extent to which meaningful participation occurs" (Ysseldyke et al., 1992, p. 9). Some of the indicators include absenteeism, percentage of time spent in the general education classroom, and percentage of students from the neighborhood. Because these variables are more oriented toward the school system, we have added a range of other, more children-oriented indices. We also have selected for the presence-participation educational goal a range of social/survival skills critical for successful transitions that Chandler (1992) has compiled (e.g., initiating and maintaining peer interactions and focusing visual attention on a speaker).

Social Behavior

Social behavioral skills reflect the "extent to which the individual demonstrates socially acceptable behavior... (including) a variety of skills, such as acting appropriately, demonstrating, social responsibility...etc." (Ysseldyke, et al., 1992, p. 13). As Chandler (1992) has noted, "social survival skills (including task related and self-help behaviors) not only affect the child's ability to fit in and adjust to the new program, but also influence the teacher's perception of achievement and the child's maintenance in the program. Two examples of the behaviors noted by Chandler (1992) include expressing affection appropriately and interacting without aggression.

Independence-Responsibility

Independence-responsibility "encompasses a range of behaviors that indicate a person can take charge of his or her own life."(Chandler, 1992, p. 12) Possible indicators

within this domain include such things as protecting oneself from danger, making choices in one's own life...and so on" (p. 12). For students to be successful in learning environments, they must exhibit a number of different task-related and self-help behaviors that can be considered under the general response class of independence-responsibility, including finding materials and not disrupting others. (Chandler 1992)

Literacy

Literacy is defined as "the use of information to function in society, to achieve goals, and to develop knowledge. Again, because of the limited specification within the context of the nongraded primary, we have also added the a list of skill competencies that includes phonemic awareness and retelling story passages with story grammar and structure.

This section has provided an innovative conceptual and theoretical framework for guiding our discussion. The major components of our model described above include a context, resource use strategies, systemic processes, systemic output, and students outcomes. Based on these premises, we have established the following project goal.

Implementation Strategies

The Oregon Educational Reform Act, and school districts provide a unique setting and event for designing, implementing and evaluating three empirically supported resource use strategies (i.e., teams, consultation, and student/program assessment feedback). We have configured three resource use strategies that operationalize the interdependencies of the systemic approach. In the first strategy, *team building*, groups are trained in specific social skills to enhance their functioning and maintain positive social interactions. Presently, nongraded teams have been configured with only one mission: to group kids differently upon entry into the school system. Little effort has been devoted to the social fabric which supports this individual and collective mission. The second strategy, *consultation*, has been implemented increasingly in schools as a solution to the burgeoning numbers of referrals. While a number of consultation programs are available for implementation, they all focus on indirect services between specialists and general education teachers, built upon a voluntary relationship. We focus particularly on a model in that incorporates some of the process skills to establish working relationships and then address the problem-solving process. Finally, the third resource-use strategy is *assessment* in the service of feedback for teachers on student performance and progress. Here we blend curriculum-based measurement with an emphasis on formative evaluation with classroom-based assessment, emphasizing diagnostics, screening, and summative evaluation.

These three strategies are integrated to reflect the importance of interpersonal relationships (Friend, 1984; Jayanthi & Friend, 1992; Idol, 1983) and problem-solving

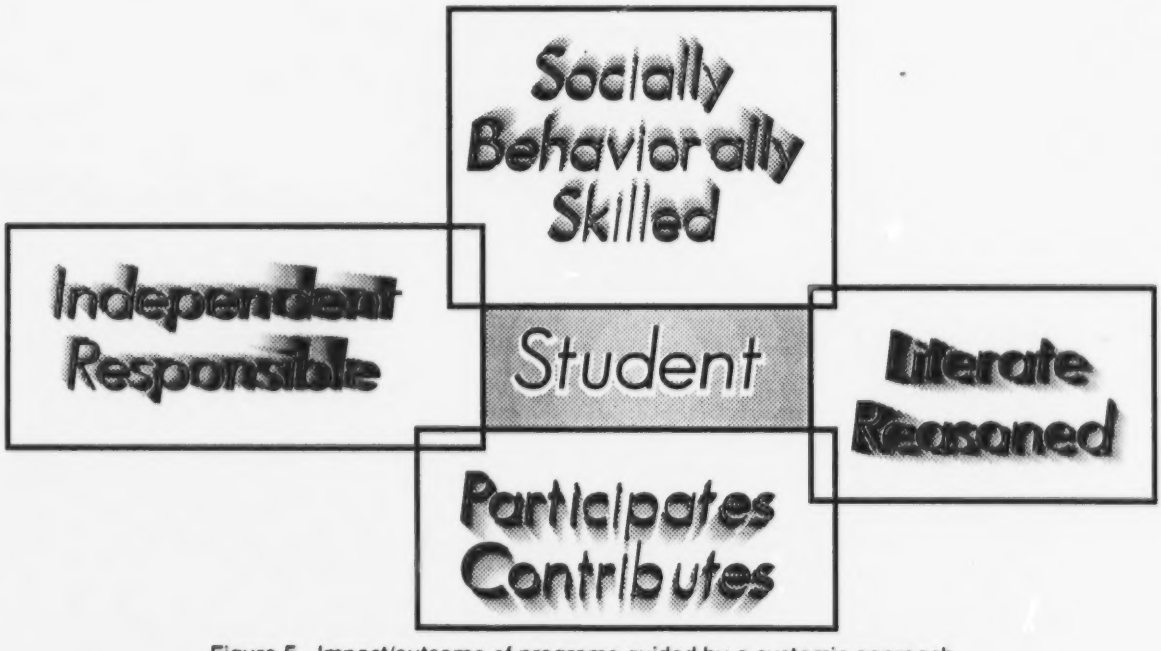

Figure 5. Impact/outcome of programs guided by a systemic approach

(Bergan, 1977; Bergan & Kratochwill, 1990; Tindal & Germann, 1991). We have integrated the two approaches in a way that may be considered an expanded model of behavioral consultation. Clearly, "basic interpersonal and communication skills are essential at every stage of consultation. These skills are important for developing a positive consultant-consultee relationship and for movement towards problem management" (Sheridan, Salmon, Kratochwill, & Rotto, 1992, p. 196). Yet, problem-solving skills as described by Sugai and Tindal (1993) are needed so that teachers have known procedures to request for assistance, operationalize problems, and evaluate programs. Finally, management of meetings and making sound educational decisions reflect important skills, such as Mainstream Assistance Teams (Fuchs, 1991), Teacher Assistance Teams (Chalfant, Pysh, & Moultri, 1979), and Prereferral Intervention Teams (Curtis, Zins, & Graden, 1987).

In our approach, we take advantage of the inherent linkage between the team-building components of organizational development and integrate the student problem-solving component of consultation. This merger allows us to maintain the interpersonal skills within a larger framework that expands the model of consultation into a proactive stance, rather than remaining confined to a reactive mode that is only "jump-started by problems." When properly framed with appropriate language and expressed within the context of a group orientation, we believe that this form of consultation is acceptable by teachers (Rosenfield, 1985).

The following briefly summarizes the empirical support for team building, consultation, and curriculum-based assessment and measurement. More importantly, each of these resource-use strategies is discussed from a systemic perspective related to their interdependencies. These interdependencies are related to school capacity-building as the essential ingredient for systemically making primary education adaptable to and inclusive of children with disabilities.

Training in Team-building at the School Site

The primary purpose of this component is to focus the initial attention of individual teachers on the group. The instructional program can no longer be a one-person show; rather, the team is the functional unit for decision-making. This focus, however, requires some preparation, so that the group assimilates all the individuals and provides a relevant role. While special education has employed strategies such as Teacher Assistance Teams (e.g., Chalfant, Pysh, & Moultrie, 1979), their orientation is couched in the context of a reactive approach to student failure. Educational reforms also have begun to rely on teaming (middle schools, Beane, 1990) as a proactive resource-use strategy to enhance the instructional planning capacity of schools and as a means for systemically creating a more adaptable and inclusive learning environment for meeting the diverse and complex learning needs of children including those with disabilities.

Six principles should guide the design of well-functioning faculty teams. First, training is more effective if it is carried out with all members of the team together, rather than by having the individuals go off to separate learning experiences. Second, the training should generate valid data for the members of the team about how their school functions as a social organization. Third, discrepancies between the current achievements of the school and the school's performance goals are used as leverage points for team problem-solving. Fourth, the training needs to make use of the available resources that already exist within the team and school to solve problems and develop new plans. Fifth, it is important that the training include an outsider to facilitate it. Sixth, it is important for the training to take place over a six-month or more period so that it can have lasting effects. An excellent model of such raining draws on the work of Schmuck and Runkel(1985), and is tailored to each site.

1. *Group Skills.* The first phase of the training is devoted to group exercises (e.g., inclusion activities, collaborative activities, and consensus discussions) and communication skills (e.g., paraphrasing, describing thoughts, behaviors, and feelings, and impression checking). Each of these activities is designed to increase awareness of interpersonal and group processes and to demonstrate the importance of effective communication in accomplishing tasks collaboratively. Participants should be encouraged to be open in giving and receiving feedback about perceptions of real group and organizational processes in the school.

2. *Meeting Skills.* The second phase of the training focuses on improving the team's ability to use meetings' skills. Activities include developing agendas, convening task discussions, recording key points of discussion, taking surveys to see where members stand on an issue, and alternative ways of making decisions, including special emphasis on reaching consensus.

3. *Problem-Solving Skills.* The third phase focuses on the application of a problem-solving sequence. During this phase participants work on issues that thwart the school's efforts to reach its goals. The problem-solving sequence consists of five stages: (a) pinpointing gaps between current situations and targets; (b) analyzing the gaps with force field formats; (c) brainstorming ways to reduce restraining forces and to increase facilitating forces; (d) designing a plan for action; and (e) trying out the plan and collecting formative data to see how the plan is going.

4. *Follow-up Activities.* The fourth phase is a follow-up to the problem solving. It focuses on the formative data and engages the team in continuously diagnosing and monitoring the change process. During this phase the

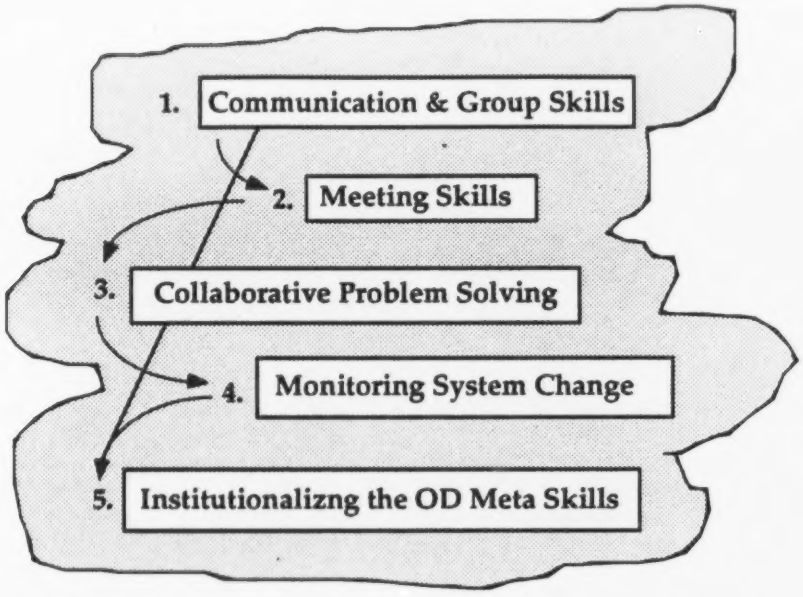
1. Communication & Group Skills
2. Meeting Skills
3. Collaborative Problem Solving
4. Monitoring System Change
5. Institutionalizng the OD Meta Skills

Figure 6. The five phases of team building and systems change

team actively reaches out to others on the faculty to orchestrate the organizational changes that the team seeks. In this phase the team uses previously learned communication and meeting skills.

5. Institutionalization. The fifth phase focuses on helping the school to institutionalize what Schmuck and Runkel (1985) called the meta-skills of organizational development. This last cycle of problem solving addresses what needs to be done to ensure that collaborative problem solving will take place continually in the school. Here, participants explore the norms, structures, and procedures required to maintain an effective capacity for continual problem solving. The primary meta skills are (a) diagnosing the organizational functioning of the school, (b) gathering information from inside and outside the school, (c) mobilizing synergistic action in the school, and (d) monitoring the other three meta-skills. A school with high levels of these skills can deal productively with changing demands and circumstances.

Consultation within and among the Team and Education Specialists

Within the team, schools also need to focus on a specific consultation model for delivering programs to students. While the team building component is oriented inward (how the individuals function within the team), this component is focused outward (to the delivery of programs for students). Although some of the issues surrounding interactions need to be addressed, we view consultation mostly in terms of program development and delivery.

Most conceptions of consultation are based upon a form of the triadic model, which consists of consultant, consultee, and client (West & Idol, 1987). In educational settings, these roles most often are filled by school psychologists or special educators serving in a consultative capacity, classroom teachers, and students, respectively (Idol, Paolucci-Whitcomb, & Nevin, 1986). According to the triadic model, consultants work directly with consultees (teachers) who have direct access to clients (students). Generally, it is assumed that the consultative process is collaborative, with changes occurring in both consultee and client (Idol & West, 1987).

Our model of consultation is based on a paper written by Tindal, Shinn, and Rodden-Nord (1989). It contains a number of variables within the school ecology that can influence the success of consultation. Three dimensions dealing with people, process, and procedural implementation are proposed for organizing 12 variables thought to have relevance at some time during the consultation process (see Figure 7). The variables must be considered concurrently throughout the consultation process; they are not relevant in isolation. Failure to consider any one variable may affect the outcome of consultation radically.

The variables are grouped along three dimensions: those that define the people involved in the consultation, those that describe the interactional process characterizing consultation, and those that address specific procedural implementation. People variables focus on the personal backgrounds and skills of the participants who have specific roles in the consultation process, including

not only consultants, consultees, and clients, but administrators and parents as well. Process variables focus on interactional characteristics of the consultation process, that is, how consultation proceeds. Although clearly related to personal backgrounds, the unit for organizing this dimension is the consultant-consultee dyad. Four variables are addressed in the process dimension: (a) the problem-solving relationship between consultant and consultee, (b) the theoretical perspective implied in their interactions, (c) the history of their working relationship described in terms of consultation stages, and (d) the activity structure of their relationship. Finally, consultation practices are characterized by three procedural activities: (a) collection of data, (b) development of programs, and (c) evaluation of outcomes. These activities often reflect the major stages of the consultation process. Typically, these latter three variables are case specific and reflect the actual, overt practice of consultation.

The predominant model used in consultation, the triadic model, has failed to include a number of these contextually based components that may influence consultation practice in complex ecologies, such as school settings. The model described in this paper is intended to serve as a heuristic device in guiding actual implementation by identifying relevant variables that may facilitate or inhibit consultation practices.

Feedback on Student Progress-Classroom-based Assessment

A number of different classroom-based assessment (CBA) systems are available, some of which are quite unique and others of which are similar to one another (Howell, & Morehead, 1987; Idol, Nevin, & Paolucci-Whitcomb, 1986; Salvia, & Hughs, 1990; Shinn, 1989; Tindal & Marston, 1990; Zigmond, Vallecorsa, & Silverman, 1987).

Sugai and Tindal (1993), identify nine characteristics used to compare these different versions of CBA. We argue that any system with all of the following dimensions would definitely qualify as CBA; any system with most of them *may* qualify as CBA; any system without these characteristics is probably some other form of assessment. In this paper we advocate all 9 components.

1. *Samples items from the curriculum.* We define the curriculum as the materials used within instruction.

2. *Focuses on both basic skills and content knowledge.* The most important basic skills are reading, writing, and reasoning with math concepts. Content knowledge includes concepts and principles in the various subject areas such as history, science, social studies, etc.

3. *Uses standardized procedures in assessment administration and scoring.* The term standardized simply refers to the use of overt procedures which may be replicated by others or by the same person later in time.

4. *Generates production responses.* Most CBA procedures involve the student creating or producing something, rather than simply selecting the correct answer (like most multiple-choice criterion-referenced tests). That is, the student writes a story, reads a passage, writes the correct spelling of words that have been dictated to them, etc.

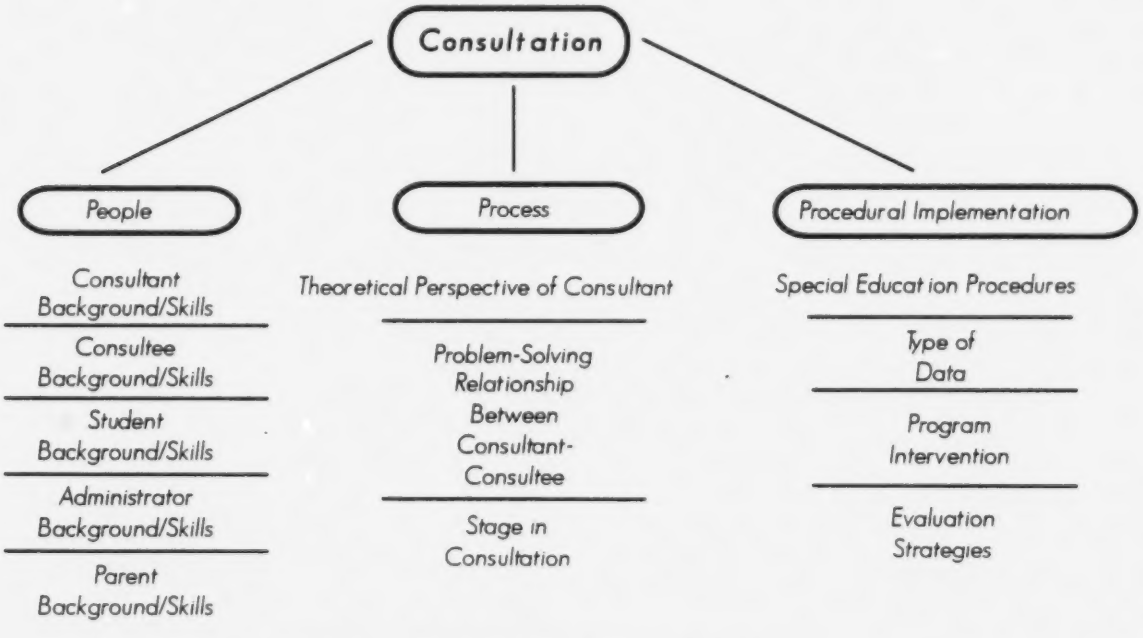

Figure 7. Components of the consultation process

5. *Produces reliable and valid data.* Hopefully, the measures used in making educational decisions, whether academic or behavioral, are consistent (reliability) and useful in making informed decisions (validity) (Messick, 1989). The best strategy for attaining reliability and validity is to employ standardized assessment (administration and scoring) procedures.

6. *Provides multi-referenced data.* Three types of reference or interpretive standards can be used when making decisions about students. First, norms of peers can be developed in which comparisons are made between a target student and others who are comparable (same sex, age, race, and cultural background). Second, absolute standards can be used with reference to specific skill areas. Third, previous performance may be used by using the student's performance alone to make judgments. Simply put, the slope of performance (or variability) is calculated using student change (improvement or decrement) over time. Very few educators use this last type of reference, though it is probably the most preferred system.

7. *Is repeated over time.* Regardless of whether the reference is norm-, criterion, or individuals, repeated behavior samples are needed to ascertain changes.

8. *Uses graphs to display results.* A number of different graphs can be used to describe student performance, including box plots (displaying percentile rank ranges), bar charts, frequency polygons (with various score and interval distributions), and line charts.

9. *Guides many educational decisions.* The four major educational decisions that can be made using CBA are (a) screening and eligibility (for specialized programs like Chapter 1 and special education), (b) instructional planning and formative evaluation, (c) program certification and (d) outcome evaluation.

Most of the research in this area has been done with a specific variety of curriculum-based assessment, generally referred to as Curriculum-based Measurement (CBM). This particular brand is described Shinn (1989), where authors from the original research team describe its various components. For example, the behaviors sampled are basic skills (confined to reading, spelling, writing, and math) and rate-based (use brief tasks from one to three minutes in duration). However, a considerable amount of research has been conducted on their use in educational decision-making, providing a wealth of data supporting their application. Although a common criticism of this measurement system is its narrow attention to limited behavior sampling (i.e., reading aloud from a passage and counting the number of words read correctly per minute), such measures are heavily supported and empirically based by scores of well-designed studies.

Summary of Resource Use Strategies

In summary, we have proposed three resource-use strategies that fundamentally restructure the way teachers work together in adapting and including students, particularly those with disabilities. The nongraded primary teachers (both those in general education and all specialists) work in teams, into which we help bring a team focus. This resource is then extended into a consultation component, which addresses how programs are delivered to students. Finally, we add an assessment component, in which teachers are provided explicit training and support in monitoring student performance and progress to help inform them of the effects of their adaptations and inclusive programs. This assessment system is fundamentally based in the learning environment.

Together, these three resources make up a radically different totality. As we have described in our approach to restructuring, we believe they operationalize a systemic approach reflecting connectivity-redundancy, generalization-specialization, minimum critical specifications, and ability to self-organize. As depicted in Figure 9, these three resources have three interfaces or edges. The interface (edge of the two planes) between team building and consultation refers to the group and interactive processes. The interface between team building and assessment generates a feedback loop that allows the team to stay focused on the primary mission (student learning, not just positive interactions within the group). And finally, the interface between consultation and assessment sets the occasion for procedural implementation, where specific data on students are collected, programs are delivered and modified, and performance interpreted. Together, with three edges these resources form a whole which is not on any of the single edges, but within them all; we refer to this effect as collaborative planning and problem solving.

Technical Method

Premises, Goals, and Outcomes

We view restructuring from a dual vantage: that of the teacher and that of the student. Our interventions, comprised of training and support of teams as they deliver instruction to nongraded primary students, should allow us to work with all participants in enhancing programs and understanding the nature of the restructuring efforts. The case studies described in this section operationalize a form of action research (Gove & Kennedy-Calloway, 1992), in which teachers develop the skills to not only solve problems, but, more importantly to frame interesting questions within the context of reform. Schools should be able to use case studies to train teachers how to use student performance outcomes and validate instructional procedures, generating exemplary cases from which others can learn—both teachers in the building team and university researchers.

Premises

We have constructed a model with a three-tiered approach to restructuring. Given an input or context (in

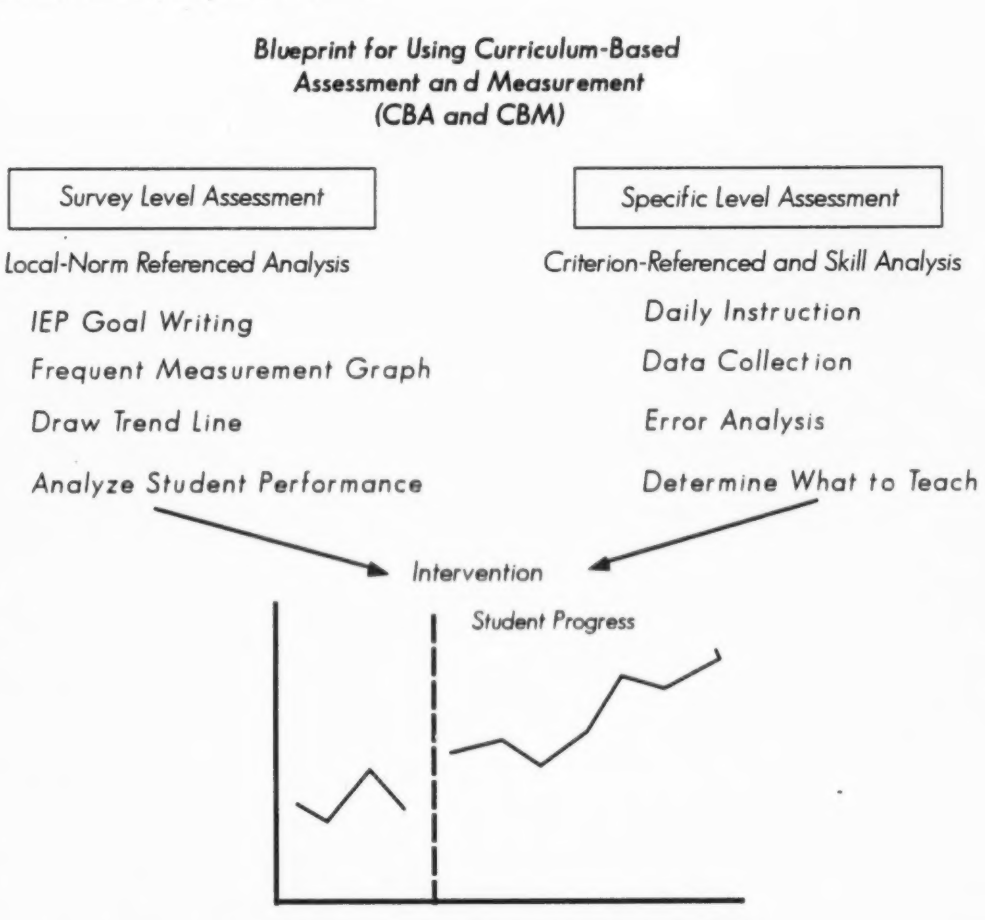

Figure 8. Components and steps in using CBA-CBM

our case, the nongraded primary), the following components appear: First is the use of resources that operationalize throughput, reflecting a systemic approach (connectivity-redundancy, generalization-specialization, critical minimum specification, and ability to self organize); second is the attainment of an output of learning environments that are adaptable and inclusive; and third is the outcome or impact. In this model, a systemic approach (including the four components of the throughput) interrelates the way in which professional educators work and sets the occasion for operationalizing resource use. The model highlights interdependencies and is in contrast to an additive model. Without the systemic approach, simply creating new resources or using the available resources does not solve any problems. In the old model, no gains are made in the *output* of restructured programs (reflecting adaptable and inclusive learning environments) and the *outcome* (of students who achieve more contribution-participation, independence-responsibility, social-behavioral skills, and literacy). In essence, restructuring never really happens.

In summary, our model of systemic change is built on three cornerstones: (a) a theoretical model that presents four operating components of a systemic approach that creates interdependencies, allowing nongraded teams/blocks to create nonstandard solutions (minimum critical specifications), maintain connectivity and redundancy, integrate a dual generalization and specialization, and establish the ability to self-organize; (b) three important resources that operationalize these systemic processes and bridge theory to practice, setting the occasion for a functional output; (c) a focus on adaptable and inclusive learning environments as the primary output of teachers; and (d) student outcomes that provide the feedback needed for the system to be regenerative (in the major domains of participation, independence, social skills, and literacy).

Implementing the Goals

In our initial purpose statement, we identified both the need to implement and to understand a systemic approach to the restructuring process. As we stated on the first page, the goal of this paper is to describe implemen-

tation, and explain the relationships among interdependent *systemic processes* (i.e., connectivity-redundancy, specialization-generalization, critical minimum specifications, and self-organization) and *resource use strategies* (team building, consultation, information feedback) within the context of school reform/restructuring (e.g., nongraded, multi-age and developmental block) to enhance system *adaptability and inclusiveness* as the means for achieving better *educational outcomes* (e.g., participation-contribution, independence-responsibility, social/behavior skills, and literacy) for children with disabilities.

To accomplish this goal, researchers need to work with local schools that are currently reforming and restructuring primary educational programs using a nongraded approach. We expect such an approach involves much more than simply regrouping students across different ages; rather, such restructuring redefines what and how teachers approach their roles and functions. We see two goals achieved by implementing our model:

1. Educational programs need to be fostered and supported so that they are sustainable, with particular attention to supporting students with disabilities in general education learning environments. Like our use of many natural resources, we often approach innovation in a manner that precludes a sustainable yield. Interventions need to be based on providing teachers group processes to form teams, consultation strategies to develop programs, and clear student performance outcomes. In the end, the system should be regenerative: Any innovations developed are a function of improved student performance, which should in turn reinforce continuation of effective practices and extinguish ineffective ones; both components of team building and consultation then are in the service of improved student progress

2. The critical features of systemic change need to be better understood by universities working with districts to foster reform. By developing case studies and working closely with teachers to adapt instruction and include all students, important elements of change can be identified that let us confirm or corroborate predictions from our theoretical model.

We use a case-study approach as described by Yin (1989) to explicate a theoretical perspective and study a series of propositions. We propose using the theory to provide analytic generalizations for multiple case studies, allowing investigation of both literal and theoretical replications. To accomplish this outcome, we next identify our perspectives on systemic planning and the educational outcomes that we hope to accomplish. Our view of planning incorporates multiple perspectives, and it approaches the school as a workplace with different agendas, communication systems, and responsibilities. Because of such differences, the educational outcomes we define are broad and diverse, occurring at multiple levels.

Systemic Outcome Variables with Children

The children served in the nongraded primary comprise the major systemic variable. We expect that, when programs are adaptive and inclusive, the impact on students is obvious. We have identified four major outcomes that schools can and should foster, dealing with how children participate, how they maintain independence, how they behave socially, and how they communicate with symbols.

Project planning, change, and feedback activities are all linked in the resource use strategies within the nongraded primary, with case study evaluations in the ser-

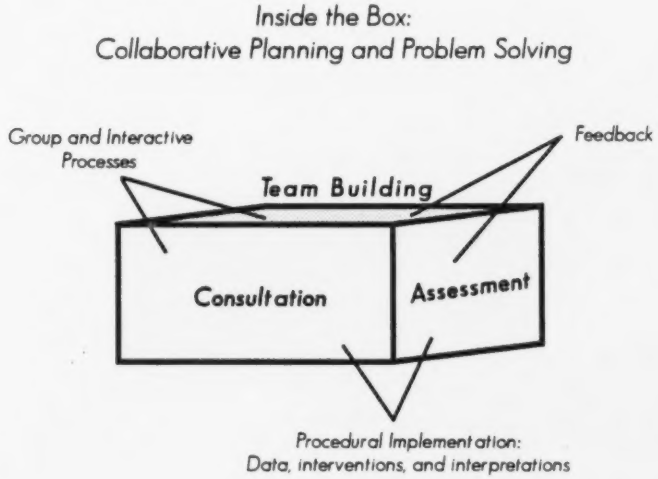

Figure 9. Interdependencies among three resource use strategies

vice of reform and an empirical investigation. Schools need to structure the case studies in a manner that allows their use directly by teachers to redefine how they work together in adapting programs to include students with disabilities. Yet, the case studies also can be viewed from a theoretical vantage in helping define and explain those components that facilitate resource use, adaptation, and inclusion. In many of the activities, teachers benefit directly and research data are collected concurrently.

Systemic Change Features

The following systemic features are integral:

1. Teams/blocks of teachers who develop and deliver educational programs in a variety of learning environments are the major unit of analysis. Teams develop a consultation-based approach so that these learning environments can be adapted to meet the needs of individual students, particularly those with disabilities, and include them in a full array of program options.

2. Our educational outcomes include a diverse array of student and teacher behaviors. An immediate impact of this work should be improved performance and progress of students; using a consultation forum to get teachers working together and establishing student learning and improvement as the content of their collaborative efforts, all students should become more functional participants in the learning environment. From a systemic view, however, the most important educational outcome may be different working relationships and interactions among the staff.

3. The approach to evaluating restructuring efforts includes a case study method with a multiple-case design. Three sub-units of analysis are important to study: (a) general-education teachers' connectivity, (b) specializations of special-education teachers and related services, and (c) students, of improvement in four important areas. By using the nongraded primary team as the major unit of analysis and these three sub-units for collecting data, three propositions arise from a theoretical approach. In particular, patterns can be matched across the cases, providing both literal and theoretical replications.

In the model we use to approach systemic restructuring of educational programs, teachers are the key players; although traditional programming has separated general-education teachers from specialists, we propose looking at them together as they interact in developing programs.

For general-education teachers, issues of connectivity and redundancy allow them to assimilate the functions and tactics of specialists. Our focus on specialists highlights the tension between generalized and specialized functions. Increasingly, schools are incorporating consultative roles to specialists, requiring them to become proficient in working with general-education teachers. Their specialized training has then been incorporated into the general education classrooms.

The systemic change activities in our model that need to be supported revolve around the four throughput variables. For learning environments to be adaptive and inclusive:

- Teachers need to experience connectivity and redundancy. With a consultation model that has at its center a well-developed student assessment system (including both performance and progress over time), teachers can share the same focus. Rather than approaching teaching and learning from a philosophical vantage (for example, whether teaching in the early primary grades proceeds from a whole language or direct instruction base), they can be concurrently focused on student learning. Not only does student performance provide connectivity across philosophical persuasions, but it provides redundancy—over time, performance and progress move incrementally with multiple opportunities to revisit the same question of program effects.
- Generalization and specialization is a key systemic feature in our approach. Again, the consultation component provides an opportunity for all teachers to be involved in educational programs. As general-education teachers work with specialists, they should begin to acquire some of their skills and knowledge base; likewise, as specialists work in general education learning environments, they can come to appreciate the diverse demands and instructional tactics that are needed.
- Through consultation, we are attempting to get the whole into the parts; each sub-unit (whether teachers, children, or parents), should be more cognizant of, and in synch with, other participants. Ideally, the previous two principles result in general-education teachers taking on some of the functions of specialists and the specialists performing activities of the generalist.
- Ability to self-organize is the critical feedback loop that should result from focusing on student performance and progress. All educational programs can be accomplished in myriad ways; often, no unique features or distinguishing characteristics differentiate one reason for teaching versus another; rather, the schedule and logistics often drive practice. As a function of school restructuring, however, the organization itself can learn to adapt in relation to an outcomes criterion.

Therefore, we believe collaboration with schools and the interventions that result in the nongraded primary, become not an end, but a means for adaptation and inclusion.

Feedback Activities

The major form of feedback in our approach is student performance and progress. Teachers need to be trained how to assess students in a manner that serves many functions, the most important of which is to support the consultation process. For example, teachers can use the student performance feedback within instructional diagnosis, formative program evaluation, and summative program review. The information can be useful in developing and implementing Individual Educational Plans (IEP's) and in communicating to others, particularly parents. For example, teachers could meet in monthly study groups to bring together the three resource use strategies (team building, consultation, and assessment), using their learning environments as the primary sites for collecting data and the meetings to summarize it and describe the many ways it can be used. In that sense, every teacher is given feedback about their students and instruction.

Diverse Educational Outcomes at Two Levels

We have considered two aspects of student outcomes. The first is a description of them, noting their broad value and intrinsic importance, both in terms of accumulated learning and as reflections of accomplishments in diverse areas. The second is the nature in which the outcomes are included into systemic restructuring efforts within the schools. In particular, we have identified outcomes that have bearing on the entire system and which reflect features necessary for all students to achieve them, including those with disabilities.

The outcomes we assess are broadly stated and valued by society; we propose four different levels of outcomes corresponding to the sub-unit targets identified in the evaluation plan (general-education teachers, specialists, and children). We also have identified four major systemic principles that we believe drive the throughput of educational programs (connectivity, generalization-specialization, whole into the parts, and self-organization). These principles should have bearing on the impact we have in any restructuring efforts. Ideally, this dual level of throughput and impact are visible and measurable. If the restructuring efforts are working, we should see changes at the throughput level (the manner in which the school operates); furthermore, we should see differences in the impact on students (their participation, independence, social skills, and literacy). Based on this dual approach, outcomes need to be structures according to these two superordinate levels.

Strategic Vision of the District and the Community

Our vision of the district and community is that, without a systemic approach, the business of teaching and learning is not bound to change. The social reforms present in Oregon (via legislative mandates and incentives) make this topic very pertinent. The community is telling schools to investigate new ways of moving students through schools; our fear is that, without restructuring, and in particular without guiding principles and an outcomes criterion (Reshley, Kicklighter, & McKee, 1988), decisions to adopt specific models will be made for all the right reasons, but without the correct information. We have, therefore, built into this model, an important link between schools and the community in the form of reporting student progress. Rather than using traditional report cards, we anticipate that what teachers present to parents and how they present it will be drastically transformed. An immediate impact is likely to be different understanding by parents, more involvement in the schooling of their children, and more skills and knowledge in developing and extending the learning environments beyond the walls of the school building.

Planning Related to Premise, Goals, Design, Change, Feedback, & Evaluation

Planning adaptations and inclusion are established in a systemic and systematic manner. We frame the institution from a holistic vantage with many different sub-units and identify broad educational outcomes that focus on how teachers interact with each other and with children as well as what skills and knowledge children learn. Schools need to include a diverse range of methodologies in their case studies, collecting data by participant observation in meetings and conferences, interviewing educational personnel and parents, and constructing analog tasks in different learning environments. In all of the outcomes and methods, the key point is that schools have multiple agendas that continuously shape programs and practices.

Change and Feedback Needed to Support and Maintain Adaptation & Inclusion

Our use of a consultation model is critical within the schools; the same model, however, can be used in defining the relationship between the public schools and the university. These two institutions need to work collaboratively to define agendas, identify effective and efficient practices, and maintain an outcomes perspective. We expect that the four principles in our model never really become moot; rather, they are ever necessary for ensuring change does occur and what it takes to support it. Most student performance measures are teacher-defined or a result of careful observation of the learning environments. For example, a centerpiece of consultation is the use of authentic, classroom, and curriculum-based measures, all of which result from the collaboration between general-education teachers and specialists as well between the university and public schools. Fluent assessment systems allow planning and governance to be a formative component, not a summative one.

We have identified curriculum-based and classroom-measures for use in informing instruction; though the student is an important component within our project, the essential issue of greatest importance is the impact of student performance on the team decision-making process—how teachers interact with each other and with the public community. Therefore, the processes, procedures, participants needed to govern, design, implement, and asses the project includes a number of general and special-education teachers in the schools, building and district administrators, school board representatives, and researchers from general and special education.

Many sources of data are needed for understanding and evaluating the restructuring efforts; the key to all these efforts is better programs for students. We expect that both components of classroom curriculum-based assessment and consultation are necessary to have an immediate and observable outcome in instruction and individualized educational plans. Of course, by identifying this variable as part of the independent variables, schools are virtually guaranteed changes in the manner in which they collect data and use it for program definition and evaluation. Teachers need to engage in alternative systems for teaching in order for the learning systems to become more functional. For example, rather than relying upon published tests, both general and special-education teachers need to use the CBA-CBM data to track progress, not just for the collaborative aspects of this project, but as a routine way of doing business.

Evaluation Design and Propositions: Case Studies on the Change Process, Effects, and Impact

Because of the school-based, nested units of analysis, and multiple components comprising this restructuring project, a traditional between-subjects or building experimental group design involving random assignment of subjects to contrasting conditions is not appropriate. Given the complexity of units of experimentation (i.e., community agencies, school districts, schools, teachers, parents, and children), achieving equivalent and independent units of analysis would be infeasible, if not impossible. Further, the ability to achieve either a stratified random, or random assignment of units of experimentation by school systems would not be tolerated or appropriate to this type of action evaluation.

Randomization is a means for attempting to control an infinite number of "rival hypotheses" without specifying any of them. It utilizes a statistical approach to rendering the implausibility of these hypotheses. An alternative is "experimental isolation" or "laboratory control." Clearly, this field-based systemic approach to professional and organizational development is not consonant with the assumptions of either experimental or quasi-experimental designs.

Therefore, we have proposed using multiple-case studies designs which Yin (1989) defines as "an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used" (p. 23). This model is based upon three well-developed empirical knowledge bases. The uniqueness and contribution of this approach lies in its holistic, interdependent, connective configuration. Thus, sufficient knowledge exists to design an explanatory evaluation utilizing a modified multiple-case replication design having embedded sub-units of experimentation and analysis. Each school site provides a basis for holistically studying the systemic approach to coupling professional and organizational development. In addition, each school site provides embedded sub-units of interest: (a) general-education teachers, (b) specialists, (c) children.

Yin (1989) states, "The distinct advantage for a case study is when a how or why question is being asked about a contemporary set of events, over which the investigator has little or no control" (p. 20). This certainly fits the multiple independent variables (i.e., consultation-based interactions among professional educators and use of sensitive student performance to guide their interactions) and dependent variables (i.e., student improvement in participation, initiation, social behaviors, and communication with symbols).

Evaluation Questions and Illustrative Propositions

Rigorous and valid case-evaluation studies begin with questions and propositions associated with both the holistic case, as well as each embedded sub-unit of analysis. The evaluation questions establish the parameters for a study. The propositions provide direction to aspects of a question which require examination within the study. The following section stipulates the case study questions for evaluation, accompanied by illustrative propositions for directing data collection activities. The full development of propositions associated with the holistic and sub-unit questions would be generated as an initial evaluation design task. Their inclusion is provided at this point to clarify the critical components essential to conducting case studies. In this paper, the holistic case study question is: *How do schools initiate, implement, and maintain a systemic approach within nongraded primary/nongraded developmental blocks that is adaptable and inclusive as a basis for achieving participation-contribution, independence/responsibility, social/behavioral skills, and literacy for all children including those disabilities?*

An explanatory case study not only must be driven by evaluation questions, but must be directed by propositions associated with the holistic and sub-unit questions. We suggest one overall proposition and three additional specific propositions, which allow us to analyze the effects of a systemic approach and to compare these propositions with what might result from an additive approach:

1. Overall Proposition Using a Systemic Approach. A *systemic approach* requires four interdependent principles (see figures in introduction) to create a nongraded primary block that is capable of being an *adaptable* and *inclusive* learning environment in meeting the needs of all children, including those with disabilities.

2. Overall Counter Proposition Using an Additive Approach. Specialized programs can additively achieve a unity across the primary grades that results in an adaptable and inclusive learning environment which meets the needs of all children including those with disabilities.

The sub-unit questions and example propositions are as follows for teachers and students:

General Education Teachers

How do general-education teachers adapt their instruction and the learning environment to effectively include diverse learners including those with disabilities?

1. Proposition regarding general-education teachers-systemic approach. Regarding the staffing of a nongraded primary developmental block, the greater the connectivity between the primary teacher and specialty teachers, the greater their capacity will be to adapt for, and include, children with disabilities. First, the staff members become learning-problem centered as well as curriculum- and affect-centered, with new responsibilities for discovering, diagnosing, and remediating individual children's learning problems. Thus, they will develop specialist skills. Second, they will have to work collaboratively, often in their classrooms, with specialists who will help students and them develop new skill dimensions.

2. Counter-proposition regarding general-education teachers-additive approach. The general education teacher will exchange information with specialist but realize less professional development as a basis for generating or persisting in the design or implementation of adaptations necessary to effect continuous student progress. In an additive approach to achieving unity, we would expect to find the very problems reported by Ysseldyke and Thurlow (1983) in their integration of findings from five years of research on referrals to special education. Basically, teachers do not implement any specialized programs, attempt few modifications in the classroom before referring the problem for eventual placement, and generally have low tolerance for students who have behavior and learning problems.

Specialists

How does the function and knowledge of the specialists (e.g., special education teacher, Chapter 1 teacher, bilingual teacher, consultants) change in a nongraded primary developmental learning environment? A proposition related to the role of specialists is that their functions increasingly become a part of general-education teachers perspectives and operations:

1. Proposition Regarding Specialists-Systemic Approach. Generalists assimilate more specialized functions and specialists accommodate more generalized needs and demands. Together, they develop programs that reflect greater adaptation and are more inclusive for all students, particularly those with disabilities. We expect to see more teaming, more consultation, and more data based program modifications with the systemic approach. In particular, we expect to see more team teaching in the same environment as both general education and specialists interact with all students.

2. Counter Proposition Regarding Specialists-Additive Approach. The primary role of the specialist is to work directly with individual students in a separate setting to overcome skill deficits; instruction in this setting supplants the instruction in the general education setting. The additive approach would allow services to be provided in a non-integrative manner, with pullout programs provided by different professionals. Again, the findings from the Institute for Research on Learning Disabilities are instructive (Ysseldyke & Thurlow, 1983): From an additive model, we would expect to see specialists primarily functioning as gatekeepers (testing to determine eligibility) rather than as team diagnosticians who specialize in instructional remediation for all students. When students (and only after being certified with a disability) are eligible, the role of the specialist is to take over the job of the general education teacher.

Children

How do children progress in a learning environment that has been systemically organized to be adaptable and inclusive? This question leads to the following proposition:

1. Proposition Regarding Children-Systemic Approach. The more teaming between specialists and general-education teachers, the more effective the adaptations are in maintaining student progress, and the more students are taught together, those with and without disabilities. This proposition relates to the primary target of important independent variables; by providing teachers with more encompassing student performance information in these major areas (participation, independence, social/behavioral performance, and literacy), they should be more capable of providing learning environments that are adaptable and inclusive and within which children improve.

2. Counter Proposition Regarding Children-Additive Approach. The counter proposition is that increased teaming will result in more adult interactions in which students work more independently and fail to progress. An additive model is based on input only, in which staffing patterns and programs are based only on teacher perceptions rather than student outcomes. Teachers would meet (from an additive view) to discuss curricular and instructional programs, the features that appear interesting and engaging, those activities which were easy to teach and went "well."

Linking and Interpreting Data to Propositions

The analysis strategies for a multiple-case replication study is based on a variety of approaches to analytically establish "plausibility." The primary analytic strategy for explaining associations among independent and dependent variables is reliance upon patterns. Pattern-matching employs an analytic logic that compares an empirically based pattern with a predicted one—or several alternative predictions (Yin, 1989). Interpretative rules are based on the strength with which findings are consistent or inconsistent with propositional data.

Such pattern matching can be employed to examine multiple independent and dependent variables related to the holistic and embedded sub-unit(s) propositions. If, for each variable, the predicted values have been found, and alternative patterns of rivaling hypotheses have not been found, strong causal inferences can be made (Cook and Campbell, 1979, p. 118). Because of the nature and complexity of the implementation, and change patterns that are expected, a time series analysis is best. Such an analysis, when coupled with pattern matching, permits the examination of levels of implementation (Loucks & Horsley, 1984) and cumulative effects of change over time. This evaluation plan establishes analytic generalizability of principles for designing a systemic approach to coupling professional and organizational development as a basis for achieving early literacy development.

To provide information on a case-by-case method (teacher or student), single subject methodology is appropriate because of its baseline phase, which precedes any intervention. Specifically, during the baseline phase, observation and documentation can be made of the processes and procedures a school staff (i.e., teachers, administrators, related services personnel, paraprofessionals) employs when addressing the complex needs of children within a nongraded learning environment. Evaluation questions are answered by comparing educators', parents', community volunteers', and students' perceptions and behaviors before and after intervention. In addition, the case study methodology with its interviews, questionnaires, and teacher assessments provides a rich picture of the complex process of staff development in classroom and behavior management of behavior-disordered students in the general education environment.

Description of Broad Educational Outcomes

Broad potential educational outcomes are generated for each of the above propositions and within each of the three sub-units of analysis. The overall proposition relates to the presence of our four theoretical constructs that we believe are necessary for schools to initiate adaptable and inclusive learning environments. This proposition is then framed within the general-education teacher and the specialists; it also is anchored to students' progress. Therefore, educational outcomes are related to the manner in which general-education teachers interact with specialists and the effect that this interaction has on student progress.

We identify three settings in which broad educational outcomes should be noted. If the learning environment is restructured to be adaptable and inclusive, it should be obvious to the most casual observers, even those only somewhat familiar with school norms. The analysis begins within the *learning environment*, given that is the major setting within which changes are expected. This learning environment is not the only one in which students have an opportunity to perform and show progress; in fact, many other settings within the school are available for observing how students are included. Therefore, analyses should be extended to other, nonacademic settings within the school *building*, such as the playground and lunchroom, two settings with a great number of student-to-student interactions. Finally, we extend this logic to non-school settings, assuming that far more opportunities to interact with adults exist within the general community, particularly through the *family*. These settings intersect with the sub-units of analysis to generate a multivariate database within the case study. A focus on *general-education teachers* and *specialists* is the major data source for an analysis of throughput, and *student* performance is the major data source for outcome.

The focus of educational outcomes relates to each sub-unit of analysis. The learning environment is where it begins, and then it moves to a consideration of outcomes at the teacher and student level. For general-education teachers, the focus is on adaptations and inclusion in relation to connectivity; for specialists, the issue is generalization and specialization; for the student the focus is on the four major outcomes identified earlier (presence-participation, independence-responsibility, social-behavioral skills, and literacy).

Learning Environments

The most direct source of data is observations in the classroom or relevant learning environment. The format for observations needs to be based on both qualitative and quantitative information that includes a macro- *and* micro-analysis (Medley, Coker, & Soar, 1986).

The general macro-analysis in the learning environment needs to focus on three components. First is environmental *accommodations*: taking note of physical and visual prosthetics that are present so students with disabilities can function and perform. We expect to find students seated in a manner thaf allows (if not actively teaches) cooperative interactions between students with disabilities and their peers; we hope not to find students with disabilities grouped together in the back of the room,

essentially bringing the resource room model into the general education environment. Another form of accommodation is the *social* and *instructional support* that is given to students with disabilities. In the observations, field notes taken on the type of help that students with disabilities receive should reveal teachers and students positively and socially engaged with each other on tasks that are important in the learning environment. Classrooms also can be described in terms of their *activity structures* (Doyle & Carter, 1987), or the major demarcations of teacher and student interactions. We expect that teachers who adapt the environment to include students with disabilities have created settings that are physically accommodating, instructionally supportive, and reflective of diverse activity structures.

A micro-analysis in the learning environment can be based on data from instruments such as The *Instructional Environment Scale* (Ysseldyke & Christensen, 1989). This scale is designed to capture qualitative reactions of the educational delivery and instructional support system in the learning environment. It allows researchers to report rich clusters of teacher-student behaviors rather than specific quantitative measures; furthermore, changes on qualitative scales are much more difficult to achieve (they have a much higher threshold), forcing researchers to weight the degree of change considerably before the measure is sensitive enough to detect it. However, simple play check systems (Hall, 1974) also can be used to take a count of social (e.g., positively interacting with peers) and academic (e.g., discussing subject matter with a teacher) interactions, basically reflecting a momentary time sample, providing a robust and durable estimate of inclusion.

The findings that reflect adaptation and inclusion would, at a minimum, be similar in the support provided to all students and, ideally, more accommodating for students with disabilities. Hopefully, outcomes would be generated that contradict the findings of Haynes and Jenkins (1986), in which students in general education actually spent more time in reading than those in special education (who spent more than half of their time working alone in workbooks). In any case studies, we expect to see students with disabilities actively engaged in learning with teachers a majority of the time, and certainly equal to those amounts and percentages that occur with their peers. Another example of a negative finding that would not be generated is that of students spending more time "getting ready" (disengaging, moving, and engaging) than actually engaging in instruction (Allington & McGill-Franzen, 1989). Rather, little transfer time should be used and replaced primarily with learning time.

Although schools can be expected to use different models for including students with disabilities, and, therefore, allow and preclude different functions for the specialists, the role of specialists is one of equal status and stature rather than subservience. For example, specialists can be data takers, monitoring student progress in a fairly routine manner so the general education teacher can review outcomes. This role places specialists in a fairly circumscribed and assistant-like position and would not be a positive instance of the role we hope to find.

General-Education Teachers and Specialists

An important educational outcome is the *perception* of general-education teachers. The focus of this format is to understand a number of different dimensions, including their (a) standards and expectations (Walker & Rankin, 1983); (b) tolerance and willingness to accommodate students with disabilities (Elliott, Witt, & Kratochwill, 1991); (c) estimates of the type, frequency, format, difficulty, of instructional accommodations and adaptations (Thurlow & Ysseldyke, 1983); and (d) reactions to accommodations, including estimates of student success .

We expect that teachers who establish adaptable learning environments and include students with disabilities also reflect more tolerance for diversity, have higher, but realistic, expectations, are more accurate in their estimates of student performance, and make serious adjustments in their programs rather than simple refinements that may not represent adaptations at all.

The same variables as noted with the general-education teachers would need to be addressed: (a) standards and expectations, (b) tolerance and willingness to accommodate students with disabilities, (c) estimates of the type, frequency, format, difficulty, of instructional accommodations and adaptations, and (d) reactions to accommodations, including estimates of student success. Another important dimension is the degree to which specialists create working relationships with general-education teachers that facilitates a consultative position (Garrison, 1992). Many of the functions of these teachers and assistants should be embedded within the general classroom framework. The degree to which problem-solving and planning reflects and accommodates the general education teacher is important, even vital.

As teachers plan, execute, and reflect upon instruction, researchers need to better understand how teachers form working relationships to make learning environments adaptable and inclusive. In particular, emphasis should be placed on assessing teachers' perceptions and interactions with each other as they plan developmentally appropriate programs for all students. Data from all three instructional phases should be considered—before, during, and after instruction (Kameenui & Simmons, 1990).

A major source of information on the impact of any intervention is the nongraded primary block or team meeting, in which teachers plan instructional content and formats. Although these meetings are probably loosely scheduled and somewhat irregular, they can become a rich source of information for ascertaining the effects of restructuring. Several kinds of data can be generated at these meetings, including anecdotal notes and selective verbatim on:

- the type and variety of instructional input from different teachers.
- attributions and explanations of program outcomes (Ysseldyke, Christensen, Algozzine, & Thurlow, 1983).
- personal and professional efficacy about instruction and classroom management.
- analysis of activities in concert with instructional goals and desired outcomes.
- selection and scheduling of academic programs and materials.
- facilitators and barriers to including students with disabilities.

An important part of any data collection from these block meetings is to define and track threads of content interactions, a term that Ruopp, Gal, Drayton, and Pfister (1993) used to describe their analysis of telecommunication interactions. In this analysis, the continuity of the topic over time became the critical event, with multiple interactants and perspectives providing the lifeline of a topical thread.

> Professional discourse is a unique and very important kind of community support. This support is not organized and planned in advance. Rather, it is shared everyday knowledge and expertise offered on-call. This kind of support rarely culminates in a big "Aha!" but rather in know-how that is immediately relevant to the business of the day (p.115)
>
> ...To begin a thread is to want to share an issue with a wider audience...the content of the threads represents the teachers' interests ands needs across the year (p. 123).

The following outcomes may be expected. Teachers interact differently, when nongraded primary programs are approached from a systemic view that includes student learning outcomes-progress which, in turn, is incorporated into the four principles (connectivity-redundancy, generalization-specialization, whole into the parts, and self-organization). We expect that when teachers have relevant student indicators of progress, they make educational decisions that more clearly reflect adaptability and inclusion, generating both construct validity (Messick, 1989) and systemic validity (Frederikson & Collins, 1989) for the program. For example, when a second-grade teacher has students from the year before and is able to work with his/her colleagues to improve student progress, many more options are possible for serving the student (reflecting the requisite variety noted earlier). Less time is devoted to planning and preparing for these options; furthermore, the time to evaluate the effects of instructional options is lessened considerably, given the structure from which teachers work and the student performance-progress data base from which decisions are made.

Other meetings are important for collecting information on professionals working together: Referral meetings, also known in some schools as placement team, child study, or multidisciplinary team meetings. In observing these meetings, the data, a relevant model is the Institute for Research on Learning Disabilities (1978-1984), which focused on the following variables:

- types and sources of student performance information.
- significance of the teacher data base for making decisions and selecting options.
- variety of instructional options (adaptability) within the general education setting.
- intensity of support needed from specialists to maintain programs.
- applicability of program options for all students, including those without disabilities.
- focus on follow-up rather than initial placement and program development.

The broad outcomes that we anticipate include a more coherent group structure with a common focus rather than a collection of individual-professionals with different mutually-exclusive student performance/progress data. In this team, every staff member has a functional and active role (rather than meetings being run by specialists, in which general-education teachers are treated as guests or interlopers). Furthermore, the description of the learning environment becomes much more prominent than the psychological characteristics of the students; in effect, these teams move from a person-centered to a more situation-centered perspective (Deno, Mirkin, & Shinn, 1979).

Finally, a rich data source could be tapped by holding focus groups with all teachers in the nongraded primary, both general-education teachers and all specialists (including those who provide indirect services such as school psychologists). In these focus groups, we would expect to find direct open-ended questions and issues about institutional constraints to effective practice, communication systems for parents, teacher evaluation procedures and professional development, and site-based decision making and governance. We expect that teachers' participation in these groups would change as a result of their involvement in restructuring efforts (in many ways following specific stages of concern). While initial efforts may well focus on personal issues, later involvement would likely shift to more professional or student/program issues.

Student Performance and Progress

The most direct way to include students with disabilities in the nongraded primary is to reduce the classroom variance (Gerber & Semmel, 1985; Shinn, Tindal, & Spira, 1987) so that teachers have less need for referring students for supplemental help. Therefore, researchers need to

focus heavily on educational outcomes for students, using this information for providing feedback to teachers. In fact, any major independent variable must have an impact on student performance and progress (in conjunction with consultation and organizational development practices within each school's restructuring efforts). We have identified four major areas that make an impact, each of which is considered below. As noted earlier, both a macro- and micro- observational schedule can be used.

Presence/participation is an important educational outcome that ranges from the student's physical presence in the learning environment and activity to the actual engagement and interaction of the student with other students and the teacher(s). If the interventions (of feedback for teachers and consultation organizational development of nongraded teams) are effective, we would expect students to be more participatory. For example, the physical movements of students needs to be considered (at the micro-level, this might look much like the time lapse photography movement chart [Acheson & Gall, 1980]), the target of interactions initiated by students with disabilities (at the micro-level, frequency, diversity, and duration can be addressed), and the status of the student (with the micro-level focusing on initiating and responding).

On the dimension of *independence and responsibility*, the critical issue is the engagement of students and requests for assistance. Again, this view can be documented broadly in terms of field notes that describe learning environment conditions when students look for help, the kinds of help requested, and follow-up upon receiving help, and the target for such requests. Ideally, with learning environments that are adaptive and inclusive, the teacher is not the sole source of assistance; with cooperative learning actively taught and encouraged, students who need help can look to other students; and in the truly inclusive learning environment, students with disabilities would be asked to give their peers help. Initially, field notes would reflect the degree to which students follow-through on tasks, initiate behavior (rather than waiting to be reminded) when it is routine (e.g., always coming into the room at the beginning of the day and completing some small tasks), and helping peers complete tasks. The macro-level simply reflects anecdotal notes; at the micro-level, frequency counts and percentage of time could be calculated on specific behaviors for individual students.

A focus on social and behavioral skills is based on the assumption that the learning environment is more than an academic environment; it also is comprised of a resource setting in which students learn to navigate through time and space with help and assistance from others. For example, the interpersonal behaviors exhibited by students plays an important role in setting the occasion for others to respond and be supportive. When students initiate negative social interactions, they limit their usable resources; when students make requests in a manner that is inappropriate, they limit their available resources; finally, when students not only exhibit maladaptive externalizing behavior (Walker, Severson, & Haring, 1987), but also present inappropriate internalizing behavior, they limit themselves to others for accessing resources (a reciprocity principle).

In the measures of social behavior, both molar and molecular levels of assessment need to be implemented. "The molar or global measures relate to other indices of social competence, yet the detailed, molecular assessments are important for targeting specific intervention goals. Both are essential for assessing intervention effects" (LaGreca & Stark, 1986, p. 205). Descriptions of learning environment situations, specific student behaviors, and student-teacher/student-student interactions should be provided. Field notes need to include both anecdotal descriptions and functional analyses (identifying potential antecedent stimuli and reinforcing consequences), representing qualitative measures of social behavior that "generally have received good support for their concurrent validity as measures of children's social competence" (LaGreca & Stark, 1986, p. 195). The more micro-analyses should consider positive initiations (Deno, Mirkin, Robinson, & Evans, 1980; Asher, Oden, & Gottman, 1977) and causal chains (Reid & Patterson, 1991).

Finally, several broad outcomes should be considered that focus on literacy, students' performance and progress in reading, writing, reasoning, and math concepts and algorithms. We believe that nongraded primary programs must maintain a balance between social-interpersonal components and skill-building academics. Whether considered from a constructivistic or a direct-instruction perspective, empirical support needs to be based on the attributes behind curriculum-based measurement (CBM) and the formats that reflect classroom-based assessment (CBA) to define important and broad educational outcomes. For example, a critical attribute of CBM is a focus on terminal behavior. Rather than task-analyzing skills and subskills into criterion-referenced tests (such as vowel sounds, digraphs, blends), tasks are defined that represent complex constellations of behavior (like actually reading a passage and a story within a book). In writing, the test is not whether students capitalize or correctly use subjunctives; rather, they are assessed by writing compositions and analyzing them for a range of skills (coherence and cohesion or even correctly sequenced words). CBM, however, is fairly formal and should be adjusted for use in a nongraded primary. Therefore, the formats from CBA can be used to include more and different tasks. An important distinction in any measure of literacy is that two types of tasks are needed: (a) a performance task that samples very broadly from the grade level and can be used in both a norm- and criterion-

referenced approach and (b) progress tasks that sample from the student's long-range goal material and reflects an individual referenced evaluation (Fuchs, 1986).

Family/Community

If restructuring efforts are successful, several broad educational outcomes should be operational in the families of students taught in restructured learning environments. These outcomes can be captured in two major ways: (a) at parent conferences, and (b) through mailed surveys. The critical dimensions center around the supporting role that parents play in extending the learning opportunities, in providing more and varied opportunities for students to practice a variety of educational skills, and in serving as a generalization setting for corroborating improvements seen in school settings.

Parent conferences and report cards can be used as media for viewing these outcomes. When parents come to conferences twice a year, we would expect to see more give and take with teachers, with them participating in a more active manner, making suggestions and confirming teacher perceptions about what seems to work and when, providing insights that teachers can use as they structure learning environments. In the report notes that go home we also would expect to see a different focus. Instead of rating what students are doing, we would expect to see a focus on the knowledge forms that are being taught and the interactive learning tasks that are being practiced. For example, in many conferences, parents learn what chapter their child is on, what stories are being read, and the current page in the math curriculum. Within a restructured learning environment, we would expect that teachers and parents talk more about specific comprehension skills, like story structure and story grammar—skills that can be reinforced in many other interactive media (like television and personal interactions). Or, in math, rather than talking about math problems, teachers and parents can talk about the concepts behind counting, time, greater- and less-than, etc., again leading to a wider array of other learning environments in which parents can play a role.

Surveys also can be used for collecting data on the success of schools in informing and interacting with parents and families. A key focus, for example, might be parents' reactions to the following issues:

- the type of information schools present on student learning.
- the nature and frequency of home school contacts (focusing on positive notes as well as cautions and concerns).
- the degree to which the home and school are convergent in their focus, providing extended learning environments rather than disjointed ones.
- the role of the school in extending and supporting students from dysfunctional families.

We would expect to see more consistency in the responses made by parents and teachers. The issue is not the absolute value of a reaction; rather, it is the similarity in perception between home and school. Restructured schools simply afford teachers a better data base for being more perceptive and a more grounded base upon which to build programs, both issues also being reflected in parent reactions.

Summary of Broad Educational Outcomes and Relationship with Propositions

We have identified several broad educational outcomes that should help researchers in pattern matching with the case study analysis.

At the learning environment level, we should see a more adaptable and inclusive environment; the analysis is not confined to the classroom but would include all settings within the school in which students interact with their teachers and other students. We identified general patterns of support and adaptation as well specific instructional strategies and tactics that foster inclusion. In a restructured nongraded primary, we should see teaching and learning accomplished in a very interactive manner.

From the teachers, our broad educational outcomes focus on the manner in which they plan, execute, and reflect upon instruction, particularly in the ways they communicate these thoughts. In the end, however, we need to be interested in the professional discourse that is presented in teacher interactions with each other (as members of nongraded primary blocks, as general and special education collaborators, and as participants in the larger school community).

For students, major educational outcomes can be classified into four overall strands, in which teachers expect them to become more proficient. At the very least, we anticipate students with disabilities to be more present and participatory within the general education environment. We also consider this to be a minimum and expect them to become more responsible and initiate more as they participate with their peers and teachers. We believe a nongraded primary that is adaptable and inclusive should then result in significant improvements in social and academic performance. We have defined these, however, not as task-analyzed skills within analog situations, but as terminal behaviors in relevant environments. For example, we need to focus on the nature of student-to-student interactions within the learning environment when we emphasize social behaviors; for academic skills, we need to emphasize improvement in reading, writing, and reasoning, as well as number concepts and problem solving. An important part of defining these outcomes also relates to the manner in which they are observed. We expect to see improvements not on tests, but in the general use of these skills in the service of participation in the learning environment; our use of curriculum-based and classroom-based assessment provides us a format that

keeps the skill orientation broad and anchored to functional use.

Summary

We have constructed a model with a three-tiered approach to restructuring. Given an input or context (the nongraded primary), the following components appear: (a) the use of resources that operationalize throughput, reflecting a systemic approach (connectivity-redundancy, generalization-specialization, critical minimum specifications, and ability to self organize); (b) the attainment of an output of learning environments that are adaptable and inclusive; and (c) the outcome or impact. In this model, a systemic approach (including the four components of throughput) inter-relates the work of professional educators and sets the occasion for operationalizing resource use. The model highlights interdependencies and is in contrast to an additive model. Without the systemic approach, simply creating new resources or using the resources available does not solve any problems. In the old model, no gains are made in the *output* of restructured programs (reflecting adaptable and inclusive learning environments) and the *outcome* (of students who achieve more contribution-participation, independence-responsibility, social-behavioral skills, and literacy). In essence, restructuring never really happens.

Our model of systemic change is built on three corner pieces: (a) a theoretical framework with four operating components of a systemic approach that creates interdependencies, allows nongraded teams/blocks to create nonstandard solutions, maintains connectivity and redundancy, integrates a dual generalization and specialization, and establishes the ability to self-organize; (b) three important resources—team building, consultation, assessment—that operationalize these systemic processes, bridge theory to practice, and generate adaptable and inclusive learning environments as the primary output of teachers; and (c) a focus on student outcomes that provide feedback needed for the system to be regenerative in the major domains of participation, independence, social skills, and literacy.

For this to occur and for learning environments to become appropriately adaptive and inclusive, the following process/outcomes must emerge:

Teachers need to experience connectivity and redundancy. With a consultation model that has at its center a well-developed student assessment system (including both performance and progress over time), teachers can share the same focus. Rather than approaching teaching and learning from a philosophical vantage (for example, whether teaching in the early primary grades proceeds from a whole language or direct instruction base), they can be concurrently focused on student learning. Not only does student performance provide connectivity across philosophical persuasions, but it provides redundancy—over time, performance and progress move incrementally with multiple opportunities to revisit the same question of program effects.

Generalization and specialization is a key systemic feature in our model. Again, the consultation component provides an opportunity for all teachers to be involved in educational programs. As general education teachers work with specialists, they should begin to acquire some of their skills and knowledge base; likewise, as specialists work in general education learning environments, they should come to appreciate the diverse demands and instructional tactics that are needed.

Through consultation, this model represents an attempt to get the whole into the parts; each sub-unit (whether teachers, children, or parents), should be more cognizant of and in synch with, other participants. Ideally, the previous two principles result in general education teachers taking on some of the functions of specialists and the specialists performing activities of the generalist.

Ability to self-organize is the critical feedback loop that, we hope, results from focusing on student performance and progress. All educational programs can be accomplished in a myriad number of ways, Often, no unique features or distinguishing characteristics differentiate one reason for teaching versus another. Rather, the schedule and logistics often drive practice. As a function of school restructuring, however, the organization itself can generate data so that program options become empirically based.

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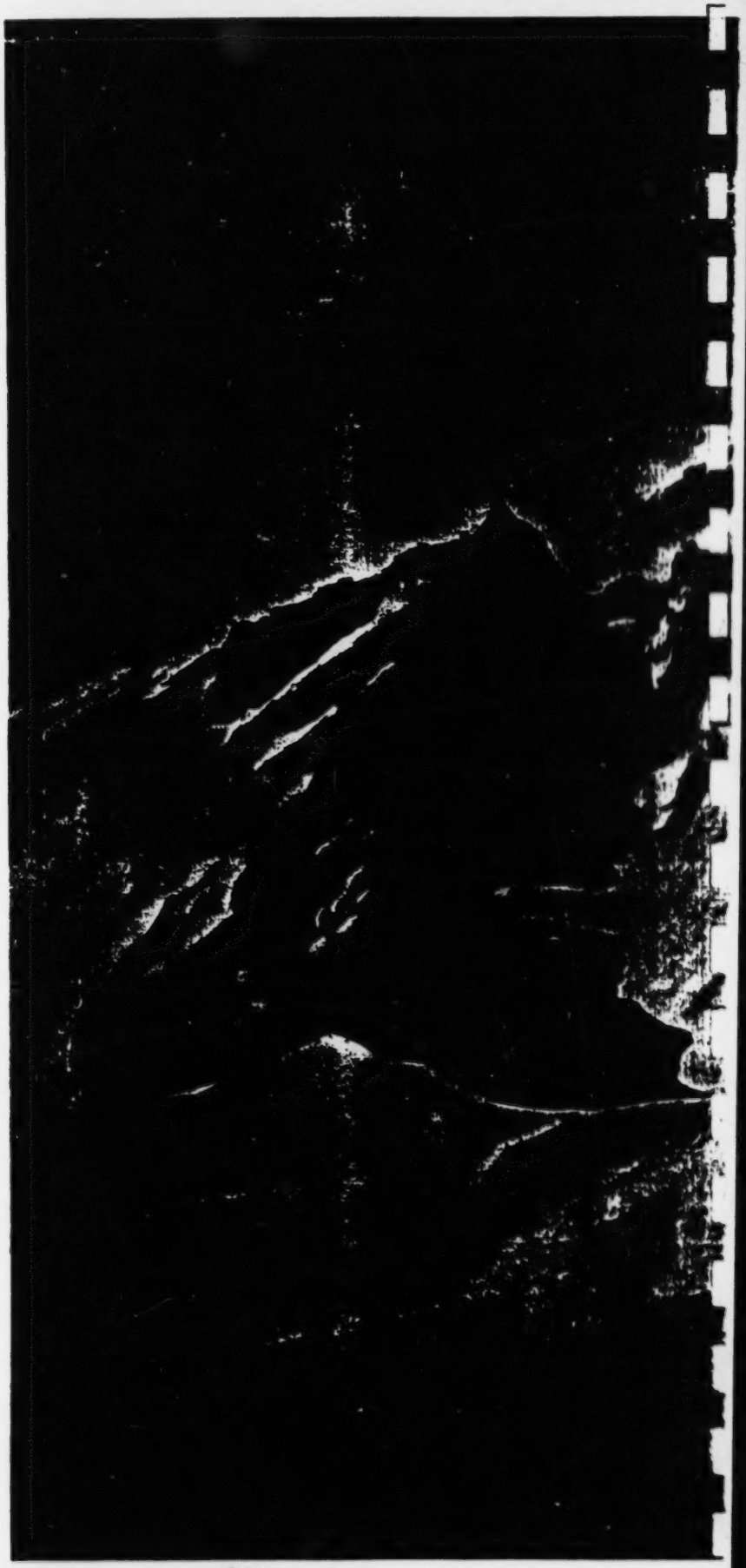

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